# ASBESTOS ABATEMENT SPECIFICATIONS SITE:

Flora Dungan Humanities Building, Rooms 132, 134, 139 and 169.

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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION CONTENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1.</th>
<th>GENERAL REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Scope of Work</td>
</tr>
<tr>
<td>1.2</td>
<td>Applicable Regulation, Codes, and Standards</td>
</tr>
<tr>
<td>1.3</td>
<td>Definitions</td>
</tr>
<tr>
<td>1.4</td>
<td>Notices and Submittals</td>
</tr>
<tr>
<td>1.5</td>
<td>Air Testing</td>
</tr>
<tr>
<td>1.6</td>
<td>Inspections by the Abatement Contractor</td>
</tr>
<tr>
<td>1.7</td>
<td>Superintendent, Foreperson, Craftsmen, Tradesmen</td>
</tr>
<tr>
<td>1.8</td>
<td>Disposal of Wastewater</td>
</tr>
<tr>
<td>1.9</td>
<td>Disposal Sites and Methods</td>
</tr>
<tr>
<td>1.10</td>
<td>Warning Signs and Labels</td>
</tr>
<tr>
<td>1.11</td>
<td>Toilet Facilities</td>
</tr>
<tr>
<td>1.12</td>
<td>Project Log Book</td>
</tr>
<tr>
<td>1.13</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.</th>
<th>ASBESTOS REMOVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Work Area</td>
</tr>
</tbody>
</table>
2.2 Preparation of the Work Area
2.3 Decontamination Enclosure Systems
2.4 Reserved
2.5 Differential Air Pressure/Negative Pressure Enclosure
2.6 Pre-Abatement Walk-Through
2.7 Removal of Duct Insulation, Putty, Wrap and Seam Tape
2.8 Removal of Fireproofing and Overspray
2.9 Removal of Friable Textured Ceiling Materials and Overspray
2.10 Removal of Thermal System Insulation
2.11 Removal of Floor Coverings, Baseboards and Associated Adhesives
2.12 Removal of Contaminated Plaster Walls and Ceilings
2.13 Removal of Caulks, Putty and Sealant Materials
2.14 Removal of Roofing Materials
2.15 Removal of Fire Doors and Dampers
2.16 Removal of Ceiling Tile

3. **ASBESTOS LOCK-DOWN/ENCAPSULATION**

3.1 General
3.2 Delivery
3.3 Quality Assurance
3.4 Products
3.5 Execution

4. **RESERVED**

5. **SAFETY**

5.1 General
5.2 Workers and Crews
5.3 Respiratory Protection
5.4 Protective Clothing
5.5 Worker Protection Procedures
5.6 Work Environment
5.7 Ladders, Scaffolds, and Work Surfaces
5.8 Electrical
5.9 Fire Protection

6. CLEANUP

6.1 Cleanup
6.2 Cleanup Sequence
6.3 Final Visual Inspection
6.4 Lockdown Encapsulation
6.5 Reserved
6.6 Final Air Clearance By Phase Contrast Microscopy (PCM) or (TEM)
6.7 Restoration
6.8 Disposal of Asbestos-Contaminated, Wastes, and Debris
6.9 Disposal Documentation
1. GENERAL REQUIREMENTS

This section sets forth requirements covering asbestos abatement in rooms 139 and 169 of the Flora Dungan Humanities Building located at 4505 Maryland Parkway Las Vegas, Nevada 89154, University of Nevada Las Vegas (UNLV known as the Job site herein. The requirements of this specification shall be binding upon the Asbestos Abatement Contractor and their subcontractors for the duration of the project.

1.1. Scope of Work

The scope of work for this project includes the removal, transportation and disposal of all friable and non friable asbestos-containing materials from the Job site. Where materials are designated to be removed as friable asbestos-containing material, they shall be treated as friable for purposes of work area preparation, removal and disposal. Asbestos inspections of the Job site and areas have been completed and copies of the reports are available for review. Original construction drawings are also available for review. The asbestos inspection reports are not warranted as being complete. Quantities listed in the inspection report cannot be considered accurate.

Abatement Contractors shall field verify all measurements, quantities and locations prior to providing a proposal for this project. All materials at the Job site shall be removed, transported and disposed of.

Asbestos-containing materials may be present which have not been tested or which may not be identified in the report. Abatement Contractors shall be responsible for identifying and removing all asbestos-containing materials at the Job site.
All asbestos-containing materials shall be removed, transported and disposed at an approved landfill as friable asbestos-containing materials in accordance with applicable Federal, State and local regulations and the asbestos abatement specifications. A list of locations from where asbestos-containing materials shall be removed is indicated on the attached drawings.

The scope of work includes the clean-up and removal of the following asbestos-containing materials:

Clean-up, (OSHAClass IV), approximately 100 pieces of movable furniture and equipment. Furniture and movable equipment to be relocate to an adjacent room prior to asbestos abatement activities.

Approximately 1041 sq. ft, of friable asbestos containing fireproofing, (OSHA Class I), material in room 169. This material is applied to structural steel and decking in several areas of room 169. The square foot figure is an estimate of floor footage. The actual square footage of fireproofing material on structural steel members and corrugated decks is greater than the floor footage. Large quantities of materials such as cinder block walls and ceilings are contaminated with fireproofing debris. The debris shall be removed and disposed of as friable asbestos-containing materials.

Approximately 941 sq. ft, of friable asbestos containing fireproofing and over-spray, (OSHA Class I), material in room 139. This material is applied to structural steel and decking in several areas of room 139. The square foot figure is an estimate of floor footage. The actual square footage of
fireproofing material on structural steel members and corrugated decks is greater than the floor footage. Large quantities of materials such as cinder block walls and ceilings are contaminated with fireproofing debris. The debris shall be removed and disposed of as friable asbestos-containing materials.

Approximately 225 sq. ft. of non-friable asbestos containing wall texture (OSHA Class I) material, approximately 295 sq. ft. of asbestos containing floor tile and floor tile mastic (OSHA Class II) material in rooms 132 and 134.

Limited building inspections for asbestos-containing materials have been performed and reports are available for review. As built drawings for most areas of the building are available for review.

All asbestos-containing materials referenced for removal in the plans and specifications shall be removed, transported and disposed of as asbestos-containing materials unless directed otherwise.

1.1.1. The work under this section shall include all work area preparation, initial pre-cleaning, removal, final cleanup/tear down, transportation and disposal of asbestos-containing materials. The Abatement Contractor shall be responsible for and shall furnish all labor, material, equipment, supplies, services, and storage, transportation and disposal necessary or required for the performance of the work in accordance with the specifications herein.

SPECIAL CONDITIONS
Materials to be removed may include multiple layers of asbestos-containing materials and in most cases, asbestos-containing materials are covered with or concealed by non-asbestos materials. In several areas materials may be concealed on top of the wall within the corrugated decking. Materials such as pipes and ducts which are insulated with asbestos-containing materials are concealed between walls and floors. In many cases, pipes, ducts and other materials are encased within walls. The complete extent of such materials cannot be accurately determined until partial demolition of the building is performed.

The Abatement Contractor shall field verify site conditions and quantities of materials to be removed prior to bidding. All permits, notifications and other notices required by Federal, State and local regulations shall be the responsibility of the Abatement Contractor. The Owner's Representative shall provide information required to assist the Abatement Contractor in preparing such notifications.

1.2. Applicable Regulations, Codes, and Standards

1.2.1. The Abatement Contractor shall maintain strict compliance with all regulations, codes, standards, and ordinances governing the performance of this work. Furthermore, the Abatement Contractor shall be responsible for any failure to comply with applicable regulations, codes, standards, and ordinance documents.

1.2.2. Applicable regulations, standards and guidelines include, **but are not limited to** the following:

- Title 29, Code of Federal Regulations, Part 1910 and
Part 1926 Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.


Local regulations in areas where asbestos waste may be transported through and/or disposed of.


American Society for Testing and Materials (ASTM)
Publication No. D 1331, Surface and Interfacial Tension of Solutions of Surface-Active Agents.

Nevada Administrative Code (NAC) 618.850 to 618.986, Abatement of Asbestos.

Nevada Administrative Code (NAC) 444.965 to 444.976, Disposal of Asbestos.

Nevada Revised Statutes (NRS) 618.750 to 618.850, Control of Asbestos.

All other Federal, State and local (county and city or other jurisdictions) regulations, codes, standards and ordinances as applicable.

The absence of a standard or regulation referenced in this section does not alleviate the Abatement Contractor from compliance responsibility.

1.2.3. Where conflict among requirements between these specifications and other codes or regulatory standards exist, the most stringent requirement or interpretation shall apply. The building Owner's Representative shall determine which requirement is most stringent.

1.3. Definitions

The following definitions apply to these specifications and the scope of work. The Building Owner and Building Owner's Representative shall be referred to the Owner or Owner's Representative. The Abatement Contractor shall be referred to
as the Abatement Contractor. Unless otherwise specified, all requirements imposed by this specification shall be imposed on the Abatement Contractor.

Abatement: The procedure to control fiber release from asbestos-containing building materials. Activities include removal, encapsulation, and enclosure.

Air Lock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area.

Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.

Amended Water: Water to which a surfactant has been added.

Asbestos: The general name given to a group of fibrous mineral forms including chrysotile, amosite, crocidolite and others. Asbestos-containing Materials are those which contain greater than one percent (>1%) asbestos as measured by the EPA interim method.

Authorized Visitor: An authorized Owner Representative, the Owner, the Owner's inspector or representative, or any representative of a Federal, State, county, city, local agency having jurisdiction over the project while acting in an official capacity or any person whose name appears upon an approved authorized visitors list.

Building Owner/Owner: Means the owner of the properties in
which the activities described in these specifications are to be performed. The Owner will also be the employer of the personnel working in the affected building. The Owner for this contract will be the University of Nevada Las Vegas.

Building Owner's Representative: Means the person, persons or company who monitors the work specified in this document with the Owner’s interests as a priority. Compliance with these specifications will be monitored by the Owner’s Representative. The Consultant and the Owner’s Representative will be the same unless otherwise specified. Either the UNLV employee(s) designating to manage the job or a Consultant contracted by UNLV to oversee the project will serve as the Owner’s Representative.

Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure with provisions for storage of workers street clothes and protective equipment.

Contractor: The Abatement Contractor responsible for performing asbestos removal, control, transportation and disposal of asbestos-containing or asbestos contaminated materials.

Curtained Doorway: A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of polyethylene over an existing or temporarily framed doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. The device is to be constructed
to ensure that the curtains automatically close the doorway once mechanical force is removed.

Decontamination Enclosure System: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers and of materials and equipment. A decontamination enclosure system always contains at least one airlock.

Differential Air Pressure/Negative Pressure Equipment: Portable local exhaust system(s) equipped with HEPA filtration and capable of maintaining a constant air flow from contaminated areas to outside uncontaminated areas.

Encapsulate/Lockdown: A liquid material which can be applied to asbestos-containing materials which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulate) or by penetrating into the material and binding its components together (penetrating encapsulate).

Encapsulation/Lock-Down: All specified procedures necessary to apply an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the air.

Enclosure: All specified procedures herein necessary to completely enclose asbestos-containing material behind airtight, impermeable, permanent barriers.

Equipment Decontamination Enclosure: That portion of a
decontamination enclosure system designed for controlled transfer of materials and equipment, typically consisting of a washroom and a holding area.

Equipment Room: A contaminated area or room which is part of the worker decontamination enclosure, with provisions for storage of contaminated clothing and equipment.

Fixed Object: Equipment, fixture, or furniture in the work area which cannot be removed from the work area. Generally applied to any device or series of devices which cannot be removed due to size, weight, or plant usage considerations.

Glovebag Technique: A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short pipe runs, valves, joints, elbows, and other non-planer surfaces in a contained work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag typically constructed of 6 mil transparent regulate polyethylene, two inward projecting long sleeve rubber gloves, one inward projecting sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated, and contains all asbestos fibers released during the removal process. All workers who are permitted to use the glovebag technique must be highly trained, experienced, and skilled in this method.

HEPA Filter: A High-Efficiency Particulate Air (HEPA) filter
capable of trapping and retaining 99.97 percent of particles greater than 0.3 micrometers.

HEPA Vacuum Equipment: Vacuum equipment with a HEPA filter system.

Log Book: A notebook or other device containing a daily chronological project diary, essential project data, and daily project information. This book shall be kept up to date and on the project site at all times. The Log Book is subject to review at any time by the Building Owner, his agents, employees, and representatives, and any representative of a Federal, State, county, city, or local agency having jurisdiction over the project while acting in an official capacity.

Movable Object: Equipment, fixture, or furniture in the work area which can be removed from the work area. A movable object as defined per this specification shall be removed from the work area to preclude contamination and subsequent cleaning/disposal of the affected equipment, fixture, or furniture.

Polyethylene: A generic term used to denote a varied group of polymers. Within this specification, polyethylene is used to describe the material commonly supplied in 4 mil, 6 mil and 10 mil thickness polyethylene sheets, used to cover ceilings, floors, and walls and used to act as an air and water barrier as herein specified. All polyethylene shall be fire retardant.

Removal: All herein specified procedures necessary to
remove asbestos-containing materials from the designated areas in an appropriate manner and to dispose of these materials at an acceptable site. Removal operations within the context of this specification are subject to the approval of the building Owner, his agents and representatives (the Owner's Representative) and the applicable Federal, State, county, and local agencies having jurisdiction over the referenced project.

Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water, and suitably arranged for complete showering during decontamination.

Surfactant: A chemical wetting agent added to water to improve penetration of the water into the bulk asbestos-containing material.

Washroom: A room between the work area and the holding area in the equipment decontamination enclosure system. The washroom is physically separated from the work and holding areas and comprises an airlock.

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, sponges, mops, or other cleaning tools which have been dampened with amended water, and by afterwards disposing of these cleaning tools as asbestos contaminated waste.

Wiping: Final cleanup stage performed after gross asbestos removal where all surfaces are wet cleaned.
Work Area: Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area which has been sealed and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled access work area which has not been equipped with a decontamination enclosure system.

Worker Decontamination Enclosure System: That portion of a decontamination enclosure system designed for controlled passage of workers, other personnel, and authorized visitors. A typical Worker Decontamination Enclosure System consists of a clean room, a shower room, and an equipment room separated by functional air locks.

1.4. Notices and Submittals

Prior to commencement of any abatement work, the Abatement Contractor shall submit, as a minimum, the following items to the Owner's Representative for review and approval.

1.4.1. Written notification to the Owner and Owner's Representative of proposed abatement activity to be performed under this Contract, not less than ten (10) days before beginning of work.

1.4.2. Documentation stating name and evidence of AHERA accreditation for the Abatement Contractor's superintendent and forepersons.

1.4.3. Written proof that all required permits, licenses, and registrations have been applied for in a timely manner. Written proof considered acceptable includes copies of
all permits and licenses.

1.4.4. Certification of training for all workers and supervisors shall be submitted. Only copies of the most recent and current AHERA certificates are required.

1.4.5. Reserved

1.4.6. Proof of employee medical exams as required by OSHA regulations. Proof of medical examinations can include a notarized statement from an officer of the Abatement Contractor affirming that all employees have been examined by a licensed physician and that medical monitoring is being performed in accordance with applicable OSHA regulations. Abatement Contractors are discouraged from sending complete copies of employee medical exams to the Owner's Representative.

1.4.7. Waste storage and transport procedures as well as the intended location of disposal.

1.4.8. Emergency procedures shall be in written form and prominently posted in the clean change area and equipment room of the worker decontamination area. Everyone, prior to entering the regulated area, must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

1.4.9. Contractor employees shall be trained in evacuation procedures in the event of workplace emergencies under the following conditions:

1.4.9.1. For non-life threatening situations, employees injured or otherwise incapacitated shall
decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work place to obtain proper medical treatment.
1.4.9.2. For life threatening injury or illness, worker decontamination shall take least priority, after measures to stabilize the injured worker, remove the worker from the workplace and secure proper medical treatment.

1.4.10. Telephone numbers of all emergency response personnel shall be prominently posted in the clean area and equipment room, along with the location of the nearest telephone.

1.4.11. Exit routes should be clearly identified in the containment area.

1.4.12. Procedures to prevent and treat heat stress must be posted in the clean room area. Workers shall be provided easy access to drinking water outside of the regulated area(s) and encouraged to drink frequently.

1.4.13. When rental equipment is to be used in removal areas or in the transportation of waste materials, a copy of a written notification provided to the rental company informing them of the nature of the intended use shall be submitted.

1.4.14. If applicable, complete operating and maintenance instructions for all components and systems of Supplied Air Respiratory systems including Grade D air certification shall be available.

1.4.15. Test Laboratory Information: Abatement Contractor is required to conduct personnel air monitoring. The Abatement Contractor shall submit the name, address and telephone number of the laboratory for approval by the Owner's Representative prior to use of the laboratory.

1.4.16. EPA/OSHA Citation and/or Penalty Information, if applicable.
1.5. Air Testing

1.5.1. The Abatement Contractor shall provide all compliance air monitoring tests required by the applicable OSHA regulations, codes, and standards. The Abatement Contractor is also responsible for all calibration, preventative maintenance, and associated materials and supplies required to ensure that the equipment used is in good repair and operating within the manufacturer's recommended operating parameters.

1.5.1.1. Air sampling analysis for compliance shall be conducted on behalf of the Abatement Contractor by an independent laboratory, regularly engaged in asbestos testing. Laboratory personnel used for monitoring airborne concentrations of asbestos fibers shall be proficient in all aspects of the required laboratory analysis.

1.5.1.2. All air samples collected on behalf of the Abatement Contractor shall be analyzed by the independent laboratory either on or off the site, within forty eight (48) hours after completion of the sample collections.

1.5.1.3. The laboratory shall certify in its test reports the method of analysis used, the accreditating and or affiliating organization(s), and the results of the analysis. This test report is considered project documentation, and shall be available to the Owner, Owner's Representatives, and all Federal, State, County, and local authorities having jurisdiction over the project.
1.5.1.4. Reports of air monitoring results for any job assignment shall be submitted to the Owner or Owner's Representative on a daily basis during the abatement activities.

1.5.1.5. The Abatement Contractor is responsible for the expenses of all personal exposure monitoring.

1.5.2. Asbestos Control Limits

1.5.2.1. Inside Asbestos Work Area: Air concentrations of asbestos shall be maintained below an eight (8) hour time weighted average of 0.1 fibers per cubic centimeter of air. This applies to all work areas inside the regulated area.

1.5.2.2. Outside Asbestos Work Area: Air concentrations of asbestos shall be maintained below 0.01 fibers per cubic centimeter of air or less than or equal to background concentrations. This applies to all areas immediately adjacent to the work area except for inside the enclosed asbestos work area while work is in progress.

1.5.2.3. In cases where the outside work area levels are not \( \leq 0.01 \) fibers per cubic centimeter, the baseline levels of those areas shall become the new control limits. The Abatement Contractor shall ensure that the air concentration levels outside the work area do not exceed the baseline levels.

1.5.3. The Owner's Representative shall provide independent air testing on the work site. These tests may include, but are not limited to:

1.5.3.1. Clearance testing

1.5.3.2. Work Area samples
1.5.3.3. Barrier samples
1.5.3.4. Outside air samples
1.5.4. Air monitoring testing conducted on behalf of the Abatement Contractor shall be performed by individuals thoroughly trained in sampling for airborne asbestos dust. All air monitoring tests shall utilize NIOSH Analytical Method 7400 or the OSHA Reference Method (Phase Contrast Microscopy) for collection and analysis.

1.6. Inspections by the Abatement Contractor

1.6.1. The Abatement Contractor shall inspect work during all stages of preparation, abatement, and clean up. The Abatement Contractor shall also supervise or superintend the performance of the work at all times and ensure work shall be performed in strict compliance with the methods, materials, regulations, and required standards specified herein or as mandated by the applicable Federal, State, county, and local authorities having jurisdiction over this project.

1.6.2. Prior to commencement of work, the Abatement Contractor shall attend a pre-construction conference. This is an organizational meeting to review responsibilities and personnel assignments, to identify any visible damage to the existing structure and its general condition, to identify movable and fixed objects as defined per this specification, to locate the containment and decontamination areas and define any problems/restrictions that may be encountered, and to locate and determine transmission routes for temporary facilities including power, lighting, water, etc.;. This
The meeting shall also address emergency procedures and routes, required access and security measures, and any safety considerations which require definition or change.

1.7. Superintendent, Foreperson, Craftsmen, Tradesmen

1.7.1. The Abatement Contractor shall have a job Superintendent present on the site at all times.

1.7.2. The Superintendent shall be thoroughly familiar with, and experienced in asbestos abatement and other related work, and shall be familiar with, and shall enforce all safety and health procedures and safety equipment. The Superintendent shall be knowledgeable of all EPA, OSHA, NIOSH, state and county regulations and requirements.

1.7.3. In addition to the Superintendent, the Abatement Contractor shall provide one or more Forepersons per job assignment on the job site who are familiar with, and experienced in asbestos abatement, related work, safety procedures, and equipment.

1.7.4. The Superintendent and/or one (1) or more forepersons shall be inside each work area when work is in progress.

1.7.5. All phases of the work shall be executed by skilled craftsmen or tradesmen experienced in each respective craft or trade. Where licensed craftsmen or tradesmen are required, licensing shall be issued by the State.

1.7.6. All Abatement Contractor's employees working on this project shall possess current AHERA accreditation as asbestos workers or contractor/supervisors.

1.8. Disposal of Wastewater
1.8.1. All water produced by the decontamination of personnel, materials, or equipment shall be collected, filtered through a system capable of trapping particles 5 microns or larger in any dimension, specifically designed to remove asbestos fibers, and disposed of into a local sanitary sewer system. Used filters shall be disposed of as asbestos contaminated waste.

1.8.2. The Abatement Contractor shall comply with all Federal, State, County, and local wastewater systems regulations regarding the disposal of wastewater from asbestos abatement activities.

1.9. Disposal Sites and Methods

1.9.1 The Abatement Contractor shall not dispose of any asbestos contaminated waste, debris, or refuse in any location or manner other than in an acceptable landfill meeting all regulatory requirements for asbestos disposal using methods specified herein, and in accordance with Federal, State, and local regulations.

1.9.2. The Abatement Contractor shall submit the name of the proposed waste transporter and disposal site, within the State of Nevada, to the Owner for review prior start of work. The owner may prohibit disposal of waste materials at certain waste disposal locations.

1.9.3. The Abatement Contractor shall comply with all Federal, State and local regulations governing transport of asbestos waste.

1.10. Warning Signs and Labels
1.10.1 The Abatement Contractor shall adhere to all regulations governing warning signs, barriers, and labels, and the posting of such notices specified herein or required by Federal, State, or local agencies.

1.11. Toilet Facilities

Adequate toilet facilities are provided outside of the work area by the Owner. Use of Owner’s toilet facilities used by the Abatement Contractor shall be kept clean by the abatement workers using the facilities. In the event the Owner’s toilet facilities are not kept clean the Abatement Contractor shall provide toilet facilities for their employee’s adequate for the number of units or facilities required to ensure the health and safety of the maximum number of employees to be assigned to the job site.

1.12. Project Log Book

1.12.1. The Abatement Contractor shall maintain a project log book for the duration of the project which shall, at a minimum, contain and conform to the following:

1.12.1.1. Documentation of all Notices and Submittals
1.12.1.2. Permits
1.12.1.3. Medical Records - Proof of employee medical exams

1.12.1.4. Copies of AHERA training certificates for all personnel.
1.12.1.5. Visitor sign-in log, filled out daily or as required, and containing, as a minimum, the following information concerning visitors:
   1.12.1.5.1. Name
1.12.1.5.2. Time entered/exited
1.12.1.5.3. Affiliation and purpose
1.12.1.5.4. Date
1.12.1.5.5. Description of activity performed
   *PPE required
1.12.1.6. Description of daily activities.
1.12.1.7. Daily employee attendance roster detailing work assignments.
1.12.1.8. Damages to the structure, equipment, fixtures or furnishings incurred during the course of the abatement activity.
1.12.1.9. Detail of any loss of differential air pressure. Include time of loss, when restored, and cause of loss.
1.12.1.10. Detail of all injuries and accidents regardless of severity.
1.12.1.11. Results of all air samples collected by the Abatement Contractor.
1.12.1.12. Signature of Project Superintendent and date on all daily activity log sheets.
1.12.1.15. Records for any preventative maintenance activity performed on the HEPA filtered equipment on site.
1.12.1.16. Emergency plans.
1.12.2. This log book shall be available at the work site at all times during the course of the abatement project and shall be available for review at any time by the Owner,
Owner's Representative, all Federal, State, and local authorities having jurisdiction over the project. Upon completion of work, two (2) copies of the completed log shall be submitted to the Owner's Representative.

2. **Asbestos Removal**

Preparation, removal and maintenance of the work area shall be performed in accordance with this specification and applicable regulations. Asbestos Abatement Contractor shall coordinate all activities with other contractors working on site. A staging area shall be provided for equipment and waste storage. Decontamination units and ingress/egress points during abatement shall be kept clear of trip hazards and maintain access for emergency exiting.

2.1. **Work Area**

2.1.1. The Owner shall make selective areas of the buildings available for abatement activity. The Abatement Contractor will not have all areas within any phase available simultaneously.

2.1.2. Prior to commencing any preparation of the work area(s) for removal operations, the Abatement Contractor shall post all required documents, notifications, and warning signs. The Abatement Contractor shall erect any required physical barriers to ensure that the work area is secured.

2.1.3. The Abatement Contractor is responsible for security of the work site and work area for the duration of abatement and final tear down and demobilization. Only Authorized Visitors shall be allowed on the Work
Site. Only those personnel authorized by this specification (Owner, Owner's Representative, regulatory personnel, and authorized abatement personnel) shall have access to the Work Area. It is the Abatement Contractor's responsibility to comply with the requirements of this specification.

2.2 Preparation of the Work Area

2.2.1. Electric power, water and other utilities inside the buildings will be disconnected by others, to the extent possible, prior to starting work. Asbestos Abatement Contractor shall verify that electrical power, steam, water and other utilities are disconnected prior to start of work. There is no guarantee that all utilities can be shut or disconnected. In some areas, such as in the mechanical rooms, utilities and HVAC systems must remain active during abatement. The Abatement Contractor shall be required to work around these live systems.

2.2.2. Abatement Contractor may have to provide electrical service to the work areas if the access to the building power is inadequate to maintain the proper function of the equipment associated with the project. Temporary power shall be provided by a generator located outside of the building in a designated staging area. Temporary power and lighting installation shall be performed by licensed and competent tradesmen. Use of temporary power sources and equipment shall be installed per applicable electrical code and all OSHA requirements. The Owner shall provide access to potable water. The Abatement Contractor shall route water from the
designated source to the abatement containment area.

2.2.3. All openings in the work area shall be completely sealed airtight using critical barriers. All openings including but not limited to doorways, windows, tunnels, ducts, grills, diffusers, skylights, or openings through which pipe conduit passes, or any other openings shall be sealed securely with critical barriers using polyethylene sheeting. Establish pressure differential and negative air enclosure system in accordance with Section 2.5 of this specification and in accordance with applicable regulations. All fixed objects within the work area shall be cleaned using HEPA vacuum equipment and wet cleaning methods as appropriate, and enclosed with polyethylene sheeting. The polyethylene sheeting shall be fire retardant and be a minimum of 6 mils in thickness and securely fastened. All movable objects within the proposed work area shall be cleaned using HEPA vacuum and wet cleaning methods as appropriate, and removed from the work area.

2.2.4. Open doorways, cased openings, and corridors which will not be used for worker ingress/egress or for emergency passage during work shall be sealed with temporary partitions within the work area.

2.2.5. All polyethylene sheeting used shall be fire retardant.

2.2.6. Establish emergency and fire exits from the work areas.

Establish alternative exits satisfactory to fire officials and in compliance with all applicable codes. The Abatement Contractor must not block existing building fire exits nor interfere with the operation of fire doors. All emergency and fire exits shall be located and maintained in a manner which will preclude accidental
blockage of the passageway throughout the course of the abatement activity. It is the Abatement Contractor's responsibility to ensure that passageways are kept clear and negotiable throughout the abatement activities. All exits shall be marked in bold lettering as Exit or Emergency Exit.

2.2.7. All required scaffolding shall be erected and maintained in accordance with OSHA standards and regulations.

2.2.8. Install primary and secondary barriers constructed of 6 mil polyethylene sheeting. Use at least two layers of 6 mil polyethylene sheeting on the walls and floors of the work area. Barriers shall extend from floor to ceiling. Barriers shall be constructed to ensure the work area is air and water tight. Floor preparation may not be required in areas where flooring materials are being removed.

2.2.9. In areas where flooring is being removed, install 36 inch high splash guards with a minimum of two layers of 6 mil minimum thickness polyethylene. Splash guards shall be applied making sure that the polyethylene sheeting extends at least 36 inches up the wall and is securely fastened. If other materials such as pipe insulation, fireproofing or textured ceiling materials are being removed, wall barriers shall extend from floor to ceiling.

2.2.10. In exterior areas where fireproofing textured ceiling materials or overspray is removed, a containment structure shall be constructed using scaffolding and lumber. A minimum of two layers of 10 mil thick reinforced polyethylene sheeting shall be used on walls and floors of the exterior containment areas. An opaque barrier shall be incorporated into the containment
2.3 Decontamination Enclosure Systems

The decontamination enclosure systems shall be constructed, affixed, and connected in such a manner as not to compromise the air tightness of the containment.

2.3.1. The Abatement Contractor shall provide portable, prefabricated shower units. Prefabricated showers shall be clean upon arrival at the job site. Showers arriving at the site unclean shall not be set up. Care shall be taken during set up of showers to maintain cleanliness.

2.3.2. Connect the Decontamination Enclosure System to the work area at the worker ingress/egress point or connect to the worker ingress/egress point with framed-in tunnels, if required to facilitate worker entry/exit.

2.3.3. Decontamination chambers shall be a minimum of 76 inches tall and a minimum of 36 inches on each side.

2.3.4. All access between contaminated and uncontaminated rooms or areas shall be through a decontamination enclosure system. In all cases, access between any two rooms within the decontamination enclosure shall be through an air lock with curtained doorways.

2.3.5. Worker Decontamination Enclosure:

2.3.5.1. The Abatement Contractor shall construct a worker and visitor decontamination enclosure adjoining the work area consisting of three (3) totally enclosed chambers: shower room, flanked by an equipment room, and a clean room.
The equipment room shall be connected to the work area and contain an air lock leading to the shower room. In addition, the equipment room shall:

2.3.5.2.1 Contain a marked receptacle for the discarding of contaminated clothing prior to entering the shower room.
2.3.5.2.1.1 All contaminated clothing shall be discarded.

2.3.5.2.2 Contain a designated area for a fire extinguisher, which is accessible and clearly marked as a fire extinguisher site. A fire extinguisher shall be available in this area throughout the course of the abatement and clean up activities.

2.3.5.3 The shower room shall be connected to the equipment room and the clean room by an air lock. It shall, as a minimum, contain the following:

2.3.5.3.1 Removable shower grate.
2.3.5.3.2 At least one shower with hot and cold or warm water. If required, the Abatement Contractor shall provide a portable water heater to supply hot or warm water. Where hot and cold water are supplied to the shower, there shall be a mixing device, capable of controlling the flow of hot and cold water to ensure that warm water is available to the workers, and that the workers shall not be exposed
to thermal extremes in water temperature. Warm water, when supplied as the sole option, shall be supplied to the shower head at a temperature not less than 85 degrees nor more than 100 degrees Fahrenheit as measured at the shower head. The shower head shall be adjustable or attached to a flexible hose, to allow the person in the shower to direct the flow of water.

2.3.5.3.3. Sufficient soap, shampoo, and disposable towels for all personnel at all times. These commodities shall be monitored and restocked as necessary to ensure that all personnel are adequately supplied.

2.3.5.3.4. Opaque curtains at each shower air lock. The use of transparent or semi-transparent curtains is prohibited.

2.3.5.4. The shower room shall not leak, and the water shall be appropriately filtered and properly disposed.

2.3.5.5. The clean room shall be connected to the shower room by one air lock, with a curtained doorway leading to any other non-contaminated space within the Worker Decontamination Enclosure. The clean room shall be large enough to provide storage for the workers street clothes, towels, or any other required non-contaminated items. The Abatement Contractor shall provide security
measures within the clean room for the worker's personal items.

2.3.6. Equipment Decontamination Enclosure:

2.3.6.1. Construct an equipment decontamination enclosure, where applicable, consisting of two (2) totally enclosed chambers: a washroom and a holding area. Equipment decontamination chambers shall be a minimum of 76 inches tall and a minimum of 36 inches on each side.

2.3.6.1.1. The washroom shall constitute an air lock and shall be connected to the holding area by a curtained doorway.

2.3.6.1.2. The holding area shall constitute and airlock and shall be connected to any uncontaminated area by a curtained doorway.

2.3.6.2. These spaces shall be for the cleaning and decontamination of bagged or wrapped and sealed wastes. In addition, this is the preferred ingress and egress point for equipment. All equipment shall be thoroughly decontaminated or securely encased by wrapping in two layers of 6 mil minimum polyethylene and sealed before removal from the work area.

2.3.6.3. Water shall be collected, filtered, and properly disposed of (see Section 1.8, Disposal of Wastewater).

2.3.7. The Decontamination Enclosure Systems shall be maintained to ensure that the barriers, air locks, and polyethylene linings are effectively sealed and taped. Repairs shall be undertaken immediately upon
discovery of a defect. The Abatement Contractor shall be responsible for ensuring that the system is maintained at all times, and that all personnel are cognizant of the requirement to maintain an effective system, and shall report and repair problems as they become apparent.

2.3.8. Visually inspect and thoroughly clean the Decontamination Enclosure System, as a minimum requirement, at the beginning and end of each work day. Additional cleaning shall be performed as required.

2.4. Reserved

2.5. Differential Air Pressure/Negative Pressure Enclosure

For all pre-clean, removal, clean up and final clearance activities, the Abatement Contractor shall ensure that the ambient air pressure in work areas be maintained at a pressure less than that of areas outside of the work area. Differential air pressure/negative pressure is required for the duration of the project and shall be maintained from the time that work commences until final clearance has been achieved, and the Abatement Contractor is notified that the area has met clearance criteria.

2.5.1. After preparation of the work area, construction of any barriers, and construction of Decontamination Enclosure Systems, the air pressure in the work area shall be maintained at a static pressure less than that of areas outside the work area.

2.5.2. This shall be accomplished by the use of an appropriate number of air filtration units equipped with a primary filter, a secondary filter and a HEPA filter. Before start of work, submit in writing, design of differential air
pressure system to the Owner's Representative for approval. Include the number of air filtration units required and the locations of the units in the work area. Spare units shall be available to the work area in case of equipment failure. No air shall be exhausted from the work area without HEPA filtration.

2.5.2.1. To calculate the number of units needed for the abatement:

\[
\text{Number of units needed} = \frac{\text{Total Ft}^3/\text{Min}}{0.75(\text{Capacity of Unit in Ft}^3/\text{Min.})}
\]

2.5.3. All HEPA air units shall be equipped with gauges or other devices indicating when filters require changing.

2.5.3.1. All primary filters shall be changed at the start of each shift.

2.5.4. All filter replacement shall be performed inside the work area.

2.5.5. Reserved

2.5.6. Reserved

2.5.7. Air filtration units shall remain in use until final clearance criteria has been achieved by the Abatement Contractor. Removal activities, including pre-cleaning and final cleaning, shall not be performed unless the pressure differential/negative pressure enclosure is installed and operational in accordance with this specification and applicable standards.

2.5.8. The Abatement Contractor shall supply a device capable of continuously monitoring and recording in printed form pressure differential between the work area and areas outside the work area. The printed record shall be included in the Project Log Book, and shall be available to the Owner's Representative and Federal,
State or local authorities having jurisdiction over the project. A minimum of two devices shall be provided per building level.

2.5.9. The work area shall be maintained at a pressure differential of at least 0.02 inches of water as measured across any barrier between the work area and areas outside the work area. A sufficient number of air filtration units shall be supplied to provide an exchange of air within each work area every 15 minutes (four air changes per hour).

2.5.9.1. To calculate the total air flow requirement:

\[
\text{Total Ft}^3/\text{Min.} = \frac{\text{Volume of Regulated area (in Ft}^3\text{)}}{15\text{min}}
\]

2.5.10. Exhaust from air filtration units shall be exhausted to areas outside of the building.

2.5.11. Reserved
2.5.12. Reserved

2.6 Pre-Abatement Walk-Through

Prior to beginning any abatement activities, the Abatement Contractor shall request the Owner's Representative to conduct a pre-abatement inspection. The inspection will visually determine if all appropriate procedures, methods, and measures have been adhered to prior to abatement.

The inspection shall include, but not be limited to:

2.6.1. Inspection of work area.
2.6.2. Inspection of barriers, air locks, curtained doorways, emergency exits and security.
2.6.3. Inspection of the Decontamination Enclosure Systems.
2.6.4. Inspection of differential pressure/negative pressure
equipment and presence of sufficient air filtration units.
2.6.5. Reserved
2.6.6. Inspection to verify that all notices and warnings are posted.
2.6.7. Abatement shall not commence until the Owner's Representative approves the work area, and indicates that the Abatement Contractor may start abatement.

2.7. Removal of Fireproofing and Overspray Materials

2.8.1. Prepare work area as specified in accordance with applicable regulations and the specifications.
2.8.2. Removal work includes removal of all fireproofing materials from structural members and decks including overspray present above ceilings and soffits, on ducts, conduits, pipes, walls and other materials located in the area. All contaminated materials shall be cleaned or removed and disposed of as friable asbestos waste.
2.8.3. Wet materials with amended water, using equipment recommended by the manufacturer for this purpose, capable of providing a mist application to reduce the release of fibers. Wet the material repeatedly during the work process to maintain an adequately wet condition and to minimize fiber release.
2.8.4. The Abatement Contractor shall use removal techniques, methods, and equipment which shall not permit the fiber count during any operations to exceed 0.10 fibers/cc of air as determined by personal air sampling methods. Any remedial measures taken by the Abatement Contractor to meet this requirement shall be at the Abatement Contractor's expense.
2.8.5. Remove materials using hand scrapers. Water blasting
2.8.6. Clean substrate thoroughly ensuring no visible debris remains.
2.8.7. Substrate material with textured ceiling materials may be removed in conjunction with fireproofing materials.
2.8.8. Clean-up all debris at the end of each work shift. Do not allow material to dry. Collect the material that has been removed and place it into impermeable sealable polyethylene (6 mil minimum thickness) designed specifically for asbestos disposal. Evacuate excess air from the bag and transport to the waste load out area. All waste must be double bagged using two 6 mil polyethylene bags with appropriate labels. Damaged or leaking waste containers shall be repaired or replaced. Damaged and/or leaking containers of waste shall not be removed from the work area. No waste containers shall be removed from the work area without all proper labels as required by applicable regulations.
2.8.9. All materials shall be removed, packaged, transported and disposed of as friable regulated asbestos-containing materials.
2.8.10. Clean work area as per Section 6.0

NOTE: Only wet removal techniques are allowed per this specification.

2.9. Reserved

3. Asbestos Lockdown Encapsulation

Encapsulation work includes the lockdown of all surfaces from which asbestos-containing materials are removed. Lockdown encapsulation shall be applied after receipt of final clearance documentation and prior to the removal of the containment
polyethylene sheeting. The Abatement Contractor shall submit information regarding the lockdown encapsulant used in the project area.

3.1. Delivery

Deliver materials to the job site in original, new, unopened packages and containers bearing manufacturer's name and original container label.

3.2. Quality Assurance

3.3.1. Application shall be performed only by trained and competent workers with experience in the application of the particular encapsulant used, and supplied with the type of equipment recommended by the encapsulant manufacturer for application of the encapsulant. All equipment shall be in good working order and shall be maintained by the Abatement Contractor.

3.4. Products

3.4.1. Bridging type encapsulant (for sealing masonry and concrete walls, barrier surfaces during cleanup phase and asbestos containing surfaces to remain in place) shall be capable of being applied with airless spray equipment, able to withstand light impact of abrasion without releasing fibers, water insoluble when cured, and must retain sufficient integrity after six (6) years to allow recoating.

3.4.2. Lockdown type encapsulant shall form a durable barrier to keep residual asbestos containing material in place.
and shall provide a sound substrate for the reapplication of sprayed—on or toweled-on materials.

3.4.3. Penetrating type encapsulant (for sealing scratch coat plaster, wood grounds and wood blocking which have been in contact with asbestos containing material and also exposed ends of pipe insulation) shall not be noxious of toxic to the applicator or subsequent occupants, shall have high flame retardance and low toxic fume and smoke emission rating, shall have some permeability to water vapor to prevent condensation accumulation.

3.4.4. Abatement Contractor shall submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant and encapsulating material proposed for use on the work.

3.5. Execution

3.5.1. Prior to applying any encapsulating material, ensure that all surfaces are clean and asbestos-containing materials have been completely removed. Do not start lockdown until the Owner's Representative has received final clearance documentation and has authorized Abatement Contractor to begin lockdown.

3.5.2. Before beginning lockdown, provide workers with protective equipment appropriate for the type of lockdown encapsulant used and method of application. Require that appropriate protective equipment be used at all times.

4. Reserved
5. Safety

5.1. General

The Abatement Contractor shall be solely responsible for worker safety, the safety, efficiency, and adequacy of equipment, materials supplies and methods, and for any damages or injury which may result from the Abatement Contractor's work. The Abatement Contractor shall erect and properly maintain at all times, as required by the condition and progress of the work, all required and proper safeguards for the protection of the workers and the public, and shall post appropriate warning signs and barriers around the site.

5.1.1. The Abatement Contractor shall designate a safety officer at the work site, whose duty shall be the detection and recognition of safety hazards and prevention of accidents and potential accidents.

5.1.2. The Abatement Contractor shall comply with all applicable Federal and State OSHA and EPA regulations. This includes compliance with requirements for having written programs as required by the applicable OSHA standards. The Abatement Contractor shall have all applicable written programs on site and available for inspection by OSHA, the Owner and Owner's Representative. Work shall stop if the Abatement Contractor fails to have all required current written programs on site. Examples of programs required may include, but are not limited to, Confined Space Entry, Hazard Communication, Lock Out/Tag Out, Respiratory Protection, Hearing Conservation, Emergency Plan, and Bloodborne Pathogens.
5.2. Workers

5.2.1. The Abatement Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the work crew any person not skilled in the work assigned nor anyone who has not received notice, training, and instructions on the dangers of asbestos exposure and the reduction of the dangers associated with asbestos removal as well exposures to other chemical, physical and biological agents. All personnel shall be trained in general construction and demolition project safety. Workers shall also receive training in the proper use of emergency procedures, respirators, safety procedures, equipment, clothing, and work procedures.

5.2.2. The Abatement Contractor shall remove from the project any employee not adhering to any standard or requirement set forth herein.

5.2.3. The Abatement Contractor shall be responsible for providing an adequate supply of trained and experienced workers. A minimum of two (2) workers shall be on site at all times. Under no circumstances shall workers be allowed to work alone.

5.3. Respiratory Protection

5.3.1. Prior to commencement of work, all workers shall be instructed and shall be knowledgeable in the use of respiratory protection equipment. Where more than one type or model of respiratory protection will be required, only those workers who have completed instruction on
the specific equipment to be used for a specific application shall be allowed to use that equipment.

5.3.2. All respiratory protection shall be provided to workers in conjunction with a respiratory protection program which shall meet the requirements of OSHA and ANSI Z88.2. This includes qualitative and/or quantitative fit testing as appropriate.

5.3.3. Respiratory protection shall be provided based upon OSHA requirements for type of removal operations and historical data or actual exposures.

5.4. Protective Clothing

The Abatement Contractor shall provide workers and authorized visitors, including the Owner's Representative, with sufficient sets of protective, disposable, full body clothing recommended for use in asbestos operations.

5.4.1. Full body clothing shall be used and consist of:

5.4.2.1. Foot coverings (shoes, boots, or disposable foot coverings). Rubber boots are preferred within the work areas. Non-disposable foot coverings shall be decontaminated or encased in two layers of 6 mil minimum thickness polyethylene prior to removal from any contaminated area or discarded as contaminated waste upon completion of the abatement work. Disposable foot coverings are intended for one use only, and shall be discarded as contaminated waste at each egress from containment.

5.4.2.2. Disposable head coverings. These will not be required if the coveralls specified herein are full
body coverall type.
5.4.2.3. Protective clothing shall be full body coverall type, including hood.
5.4.3. Street clothes shall not be worn under protective clothing.
5.4.4. Any non-decontaminated protective clothing shall remain within the contaminated areas and shall be decontaminated or disposed of as contaminated waste upon completion of the abatement work.
5.4.5. The Abatement Contractor shall provide authorized visitors with suitable sets of protective full body clothing including boots, eye protection, and any other safety/health related appliances and equipment required within the work area.

5.5. Worker Protection Procedures

5.5.1. All decontamination procedures are for the protection of the worker and general public and shall be strictly adhered to while entering and exiting the work area except under extreme emergencies.
5.5.2. Any person entering the equipment room or the work area shall:
   5.5.2.1. Remove and secure all street clothes in the clean change room.

   5.5.2.2. Don clean protective clothing.
   5.5.2.3. Don appropriate protective equipment and perform a respirator fit check.
5.5.3. Any person exiting the equipment room or work area shall:
   5.5.3.1. Remove all gross contamination while still in the work area.
5.5.3.2. Proceed to the equipment room and remove all protective clothing.
5.5.3.3. While still wearing respirator, proceed naked (or swim suit clad) into the shower.
5.5.3.4. Thoroughly shower with soap and water. Proper decontamination includes a thorough shampoo and body wash prior to removing respirator.
5.5.3.5. After showering, proceed to the clean change room and dress.
5.5.3.6. All contaminated clothing (including footwear) shall remain in the equipment room and be discarded as contaminated waste unless it can be properly decontaminated or shall be sealed with polyethylene prior to removal from the equipment room.

5.5.4. No person shall eat, drink, smoke, chew gum or tobacco in the work area.
5.5.5. At no time will smoking be allowed within the work area.
5.5.6. Workers removing waste containers from the equipment decontamination enclosure shall enter the holding area from the outside wearing a respirator and be dressed in clean disposable coveralls. The coveralls may be worn over street clothes and shall be removed and disposed of as asbestos-containing waste upon completion of the work activity. Respirators shall be wet wiped upon completion of the work activity, and the rags or sponges used to wipe the respirators shall also be discarded as asbestos-containing waste. No worker or person shall use this system as a means of ingress or egress from the work area.
5.6. Work Environment

5.6.1. The Abatement Contractor shall be aware of the ever present dangers and shall immediately take the appropriate preventive measures to protect the workers from extreme environments (hot, cold, humid, wet) as well as from exposure to asbestos and other hazards.

5.7. Ladders, Scaffolds, and Working Surfaces

5.7.1. The Abatement Contractor shall adhere to all OSHA regulations and standards with regard to ladders, lifts, scaffolds, and working surfaces. The Abatement Contractor shall also follow proper decontamination procedures when removing said devices from the work area.

5.8. Electrical

5.8.1. The Abatement Contractor is responsible for ensuring work areas are safe from electrical hazards. An adequate Ground Fault Interrupter System shall be used as required in the National Electrical Code or by OSHA regulations. In addition, all electrical installations shall be performed by competent tradesmen, duly licensed in the State to perform electrical work.

5.9. Fire Protection

5.9.1. A minimum of one (1) fire extinguisher, (10A60BC type), for every 75 feet shall be required in the work area and at least one (1) outside the work area shall
be required. Locations of extinguishers shall be clearly marked. All personnel shall be familiar with the location and operation of the fire extinguishers prior to commencement of the work.

5.9.2. The Abatement Contractor shall be responsible for fire protection in all work areas and support areas. The Abatement Contractor shall install and maintain appropriate fire alarms and a named designated fire watch as directed by the Owner.

5.9.3. Smoking shall be prohibited inside any work area.

5.9.4. High heat sources such as heaters and open flames shall not be brought into or used in the work area or areas outside the work area.

5.9.5. All exits and means of exit access (aisles, corridors, etc.) shall be maintained in operation unless alternate exit facilities meeting NFPA No. 202, the Life Safety Code, are provided. The exits and exit access shall be equipped with sufficient lighting, including back-up lighting, to ensure that the exits and exit access can safely be negotiated at all times. The Abatement Contractor shall ensure that this lighting shall remain available to the personnel through all emergency exiting procedures.

5.9.6. The Abatement Contractor shall ensure that all personnel are familiar with the use of the designated exits and exit access. The Abatement Contractor shall also designate an assembly area for use following emergency evacuations of the work area.

5.9.7. All fire protection and life safety requirements including, but not limited to, fire detection equipment and emergency egress shall be in accordance with State Fire Marshall and Owner requirements.
6. Cleanup

6.1. General

Immediately upon removal of asbestos-containing materials, the following clean-up procedures shall commence:

6.1.1. Collect the material which has been removed and place it into polyethylene bags (6 mils minimum thickness) and sealed with as little free air space as possible. The bags shall then be placed in a second 6 mil polyethylene bag which shall be cleaned, decontaminated, and sealed with as little free air space as possible, and transported.

6.1.2. All references to bags shall include any other waste container or materials that have been wrapped in polyethylene sheeting.

6.1.3. Clean the external surfaces of the bags/waste containers thoroughly in the work area. Next, move the containers into the Equipment Decontamination Enclosure. Proper container decontamination requires:

6.1.3.1. Remove gross contamination in the work area.

6.1.3.2. In the Washroom, wet clean all containers thoroughly.

6.1.3.3. Place in polyethylene bag with required warnings and/or labels clearly imprinted on the bag.

6.1.3.4. Seal the bag with as little free air as possible, twisting the top of bag, goosenecking the bag, and wrapping the gooseneck with duct tape to hold in place.

6.1.3.5. Move the container into the Holding Area.

6.1.4. Once in the Holding Area, all containers shall be
handled by workers, wearing uncontaminated, clean protective clothing entering from uncontaminated areas. No worker shall exit through the Equipment Decontamination Enclosure.

6.1.5. All waste containers shall be labeled in accordance with applicable regulations.

6.1.6. Maintain a clean work area at all times. Thoroughly clean the work area, including decontamination enclosure system, at the end of each work day and/or work shift or as required to ensure a clean work area. Waste asbestos-containing materials shall not be allowed to accumulate uncontained in the work area.

6.2. Cleanup Sequence

6.2.1. Following abatement activities, remove remaining gross accumulations of asbestos-containing materials.

6.2.2. Inspect for, and remove all visible accumulations of debris.

6.2.3. HEPA vacuum and/or wet wipe all surfaces within the work area.

6.2.4. All equipment and containers shall be decontaminated and removed. Equipment that cannot be adequately decontaminated (wooden handles on shovels, scrapers, brooms, etc.) shall be placed in 6 mil polyethylene bags or wrapped in two layers of 6 mil polyethylene and securely sealed.

6.2.5. Remove top layer of polyethylene sheeting and dispose of as contaminated waste.

6.2.6. HEPA vacuum and wet wipe clean all surfaces of the work area.

6.2.7. The Abatement Contractor shall conduct a visual
6.3. Final Visual Inspection

Upon completion of the cleaning, the Abatement Contractor shall request a final visual inspection of the work area from the Owner's Representative.

6.3.1. The Owner's Representative shall conduct a final visual inspection of the work area. Final visual inspection will be performed by the Owner's Representative to ensure all asbestos-containing materials have been removed and all surfaces adequately cleaned. The final visual inspection will be considered acceptable if the following conditions are met:

6.3.1.1. All asbestos-containing materials have been removed and all surfaces cleaned.

6.3.1.2. All dust and debris has been removed from all vertical and horizontal surfaces in the work area.

6.3.1.3. All waste materials and removal equipment (except containment barriers and air filtration system) has been removed.

6.3.2. The Owner's Representative's acceptance of the final visual inspection shall not be considered acceptance of all removal, clean up and decontamination of the work area. If final air tests fail, or if additional materials or contamination is found (e.g. debris under containment barriers), the Abatement Contractor shall clean or re-clean affected areas at the Abatement Contractors expense. Additional time and costs shall not be paid to
the Abatement Contractor.

6.3.3. If the Abatement Contractor repeatedly fails to pass the final visual inspection (repeatedly defined as more than two failures of visual inspection per work area), the Abatement Contractor shall be responsible for all fees and costs incurred by the Owner and Owner's Representative for performance of additional visual clearance inspections.

6.4. Reserved

6.5. Final Air Clearance by Transmission Electron Microscopy (TEM)

6.5.1. Upon successful completion of the final visual inspection, the Abatement Contractor shall request the Owner's Representative to conduct air clearance testing.

6.5.2. Samples will be collected using aggressive air sampling techniques in accordance with the AHERA protocol.

6.5.3. The Owner's Representative will collect clearance samples for TEM analysis. A minimum of five (5) samples will be collected for each work area.

6.5.4. Results of sample analysis are generally available within 24 hours of completion of collection of samples.

6.5.5. The Abatement Contractor shall allow adequate time for collection, preparation of samples and transportation of the samples to the laboratory.

6.5.6. Samples will be transported to the laboratory by hand delivery, overnight courier, FedEx or other regularly scheduled commercial transporters. Therefore, if samples are collected in late afternoon hours, weekends or holidays, samples may not be transported to the
laboratory for analysis until the following business day. 6.5.7. The area shall be considered clear for reoccupancy if the average of all inside samples is less than 70 structures per square millimeter (70s/mm²).

6.5.8. If the TEM clearance does not meet the specified clearance standard, the Abatement Contractor shall reclean the work area and have the work area reinspected in accordance with Section 6.1. through 6.4. of this specification. All additional cleaning work shall be paid for by the Abatement Contractor. Additional contract completion time and allowances to the Abatement Contractor for this work shall not be provided.

6.5.9. After re-cleaning and successful final inspections, the Owner's Representative will repeat air sample clearance testing.

6.5.10. The Abatement Contractor shall be responsible for all time, fees and costs; including sample collection, transportation and analytical costs; incurred by the Owner and Owner's Representative for work performed subsequent to the first failure of air clearance tests.

6.5.11. Only final visual inspections and clearance air tests performed by the Owner or the Owner's Representative shall be considered in determination of compliance of the Abatement Contractor with applicable clearance criteria.

6.5.12. After final air clearance criteria has been achieved; the Abatement Contractor shall be notified of such achievement. The Abatement Contractor shall then begin removal of barriers, decontamination facilities and air filtration units. All remaining barriers and air filtration unit filters shall be disposed as asbestos-
6.5.13. If any asbestos-containing material or debris is identified during or after removal of remaining barriers, the Abatement Contractor shall remove and or clean material or debris immediately.

6.6. Restoration

6.6.1. All areas shall be cleaned prior to leaving the job site. This includes clean up of all trash and garbage generated by the Abatement Contractor.

6.7. Disposal of Asbestos-Containing, Wastes, and Debris

6.7.1. All transport, storage and disposal of waste materials shall be in accordance with applicable regulations.
6.7.2. All asbestos waste shall be shipped with appropriate and completed shipping papers and manifests.
6.7.3. All wastes shall be disposed of in an authorized landfill. Wastes shall not be disposed in a facility identified by the U.S. EPA, ADEQ or other regulatory agency as a Superfund site, NPL site, or equivalent sites.
6.7.4. All containers shall be properly marked and meet all regulations, codes, or ordinances.

6.7.5. All containers shall be enclosed, lined and sealed prior to storage or transport of waste materials.

6.8. Disposal Documentation

The Abatement Contractor shall provide all receipts and completed manifests to the Owner's Representative within ten (10) days following transport of waste from the work area.