

Gilsenan, Michael

From: Dave Stanke [davestanke@cs.com]
Sent: Thursday, December 19, 2002 1:52 PM
To: Theodorellys, Penny; Gilsenan, Michael
Cc: Denise Sweeney; Christopher Warnick; Jack Springston; Yvonne Morrow; Linda Rosenthal
Subject: Scope of work to safely clean 114 Liberty Street

Michael and Penny,
Here is the complete scope of work (preliminary version) that we need to clean 114 Liberty. Can you review this so we can talk about it. I'll call you this afternoon.

Thanks,
Dave

Gilsenan, Michael

From: Dave Stanke [davestanke@cs.com]
Sent: Thursday, December 19, 2002 1:56 PM
To: Dave Stanke; Gilsenan, Michael; Theodorellys, Penny
Cc: Sarah C. Lee; Steven Elghanian; Steven Abramson; Mark Wainger; Karen Greenspan; Daniel Kaner; Yvonne Morrow; Linda Rosenthal
Subject: RE: 114 DEP Spec Comments



221160 114 Liberty
 Street Draf...

Just making sure this went through the first time.

-----Original Message-----

From: Dave Stanke [mailto:davestanke@cs.com]
 Sent: Thursday, December 19, 2002 2:57 AM
 To: Michael Gilsenan; Penny Theodorellys; Dave Stanke
 Cc: Sarah C. Lee; Steven Elghanian; Steven Abramson; Mark Wainger; Karen Greenspan; Daniel Kaner; Yvonne Morrow; Linda Rosenthal
 Subject: RE: 114 DEP Spec Comments

Michael,
 I got your call today, but too late to return it. Please call me at (917) 804 0401 in the future.

Attached is a preliminary spec prepared for us by Ambient, our environmental consultants. It is the scope of work that we plan to use to clean our building. It is what we have been advised that we need to do to ensure our safety. We hope that you will be able to cover this scope with your program. Please call me to discuss this.

Regards,
 Dave

-----Original Message-----

From: Dave Stanke [mailto:davestanke@cs.com]
 Sent: Monday, December 16, 2002 2:06 PM
 To: Penny Theodorellys; Michael Gilsenan
 Cc: Linda Rosenthal; Yvonne Morrow; Daniel Kaner; David E. Stanke; Karen Greenspan; Mark Wainger; Steven Abramson; Steven Elghanian
 Subject: FW: 114 DEP Spec Comments
 Importance: High

Mike,
 I sent this to Penny and wanted to also discuss it with you. We clearly believe that we require a greater scope of work than is covered in your proposal for 114 Liberty. Attached are the comments of our environmental specialist. Implied in these comments is the scope of work that we require. We want to create our own scope of work and make that part the document that you put out to bid for our building. We don't want to have to hire one contractor to do half of the job, then switch to a contractor you select to complete the work.

Please review our issues so we can discuss enhancements to your proposed scope of work. Please call me to confirm receipt and determine next steps. Some work on our building is proceeding ahead of schedule, so we will be able to start the cleanup in January.

Thanks,
Dave Stanke

Thanks,
Dave Stanke

-----Original Message-----

From: Dave Stanke [mailto:davestanke@cs.com]

Sent: Friday, December 13, 2002 11:40 AM

To: Penny Theodorellys; Jack Springston

Cc: Linda Rosenthal; Yvonne Morrow; Andrea Seyboth (E-mail); Andrew Morton (E-mail); Craig Marshall (E-mail); Daniel and Sonia Kaner (E-mail); David Stanke; Denise Sweeney (E-mail); James and Laura Fernandez (E-mail); Karen Greenspan; Makeupsonia@Earthlink. Net (E-mail); Mark Wainger (E-mail); Michael Gordon (E-mail); Rhoda Woo; Sarah C. Lee (E-mail); Sonia; Stephan and Deborah Kerr (E-mail); Steve Kerr (E-mail); Steven Abramson (E-mail); Steven@12east. Com (E-mail); William Saya

Subject: FW: 114 DEP Spec Comments

Penny,

Attached is a review of the DEP specs provided to us by Ambient Group and Jack Springston, our environmental consultant. We need to address quickly the scope of work so that we can bid out the project and get work underway. Please pass this information along to anyone in your department who needs to review it and let's schedule a meeting to discuss and finalize the scope.

We will have our own specifications completed shortly.

Thanks,
Dave Stanke

**TECHNICAL SPECIFICATIONS
FOR REMOVAL OF
DUST, DEBRIS, AND CONTAMINATED MATERIALS
AT
114 LIBERTY STREET
NEW YORK, NY**

Prepared for:

**114 Liberty Street Condominium Board
114 Liberty Street
New York, NY 10007**

Prepared by:

**Ambient Group Inc.
55 West 39th Street
New York, New York 10018**

December 17, 2002

December 17, 2002

114 LIBERTY STREET

REMOVAL OF DUST, DEBRIS, AND CONTAMINATED MATERIALS

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This project manual is provided for the explicit purpose of the Contractor bidding on the work as described herein and unauthorized use by the Contractors or transfer to other parties by said Contractors shall be construed as a violation of the Contractor's license to use this document for bidding on this project.

Violators shall be prosecuted to the fullest extent of the law.

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END OF SECTION

December 17, 2002

114 LIBERTY STREET
REMOVAL OF DUST, DEBRIS, AND CONTAMINATED MATERIALS

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**114 LIBERTY STREET
REMOVAL OF DUST, DEBRIS, AND CONTAMINATED MATERIALS**

01 PROJECT PARTICIPANTS

Owner:

**114 Liberty Street Condominium Board
114 Liberty Street
New York, NY 10007**

Environmental Consultant:

**Ambient Group, Inc.
55 West 39th Street
New York, NY 10018**

General Contractor:

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01 SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY OF AREA CONTAMINATION

- A. The accumulation of dust was the result of the destruction and collapse of the World Trade Center towers on September 11, 2001. Dust and pulverized building construction debris penetrated the building through openings in the building's exterior facade. The dust, contaminated with various contaminants including, but not necessarily limited to, heavy metals and asbestos, is present throughout 114 Liberty Street.
- B. Initial sampling conducted by Ambient Group in June of 2002, revealed that various contaminants were present at detectable levels in the dust, including the following:
 - 1. Asbestos fibers;
 - 2. Dioxins and furans; and
 - 3. Various metals, including, but not limited to, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- C. Mold growth has been identified on certain porous materials, particularly underneath the hardwood flooring on the north side of the building, from the top floor down to the basement level, as a result of water damage following the WTC attacks. Damage to the building façade, from falling debris, left the building open to the elements. In addition, water damage within the building occurred as a result of penetrations in the roofing system due to falling debris.

1.02 PROJECT/WORK IDENTIFICATION:

- A. The Project name is Removal of Dust, Debris and Contaminated Materials at 114 Liberty Street, New York, NY as shown on Design Documents dated December 17, 2002 as prepared by Ambient Group, Inc.
- B. The Work includes cleanup and disposal of all contaminated dust from the demised premises on each floor, including core and shell building improvements, of 114 Liberty Street.
- C. It is the intent of this project to remove the aforementioned dust, debris and contaminated materials (including furnishings) from the demised tenant premises and demolish and remove tenant improvements and betterments and base-building furnishes, including but not limited to HVAC units and associated duct work, carpeting, gypsum wall and ceiling board, exposed hardwood flooring, pipe insulation, spray-on fireproofing etc. The Contractor shall begin abatement work starting on the top floor and working down. The sequence of abatement on each floor is as follows:
 - 1. Building of centrally located personal and waste decontamination units;
 - 2. Installation of isolation barriers over windows, doors, ceiling penetrations, etc. using two layers of 6-mil polyethylene sheeting and sealed with tape, as well as protecting the floor with two layers of 6-mil reinforced polyethylene sheeting and sealed with tape;

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3. Establish negative air pressure;
 4. Removal and cleaning of non-porous furnishings that are scheduled to be saved (e.g., kitchen cabinets and countertops, bookshelves, etc.);
 5. Removal and disposal of all remaining furnishings and appliances;
 6. Removal of perimeter gypsum board walls, and any insulation behind the walls;
 7. Removal of interior gypsum board walls and ceilings, and any insulation behind the walls. Contractor shall thoroughly HEPA vacuum the back side of any walls that may be scheduled to remain (i.e., bathroom walls that are covered with tiles);
 8. Removal of HVAC units and all associated duct work;
 9. Removal of pipe insulation and spray-on fireproofing;
 10. Removal of all BX electrical cables and any remaining porous materials;
 11. Gross cleaning of the entire work area via HEPA vacuuming and wet wiping techniques;
 12. Removal of all polyethylene sheeting on the floors;
 13. Removal of all exposed hardwood flooring and gross cleaning of the sub-flooring via HEPA vacuuming and wet wiping techniques;
 14. Removal of carpeting and cleaning of the underlying hardwood flooring via HEPA vacuuming and wet wiping techniques;
 15. Fine cleaning of the entire work area;
 16. Work area clearance, to be conducted on each floor as they are completed;
 17. Installation of hard barriers at elevator doors and stairwells, to isolate the work area once it has passed clearance testing, from the rest of the building;
 18. Cleaning and clearance sampling of the elevators, the elevator shaft (including the top of the elevator cars and the elevator pit), and the stairwells;
 19. Removal of all isolation barriers and breaking down of the personal and waste decontamination units.
- D. This project will commence once the tenants have removed any necessary materials, items, etc. from their floors. Whatever remains on the floors will be discarded by the contractor, unless explicitly designated by the tenant (in writing to the Owner) to remain.
- E. All Work will be performed in accordance with applicable asbestos regulations including, but not limited to, the Rules of the City of New York Title 15, Chapter 1 (specific use of licensed asbestos handlers is required). The contractor shall file this abatement work with all appropriate agencies, including all fees.

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- F. At the completion of the work associated with this project, Ambient Group, will perform clearance sampling in accordance with Sections 13 and 14. Once clearance levels are met, the work area shall be released from the restrictions imposed by this technical specification. All materials will be cleaned by the procedures outlined herein.
- G. The Contractor shall be responsible for identification and verification of all materials which will be removed as part of this Work, and their respective locations.
- H. General and Administrative Requirements are set forth in the following design sections:
 - 1. 01 SUMMARY OF THE WORK.
 - 2. 02 PROJECT COORDINATION.
 - 3. 03 DEFINITIONS AND STANDARDS.
- I. Project Work Requirements are set forth in the following specification sections:
 - 1. 04 CODES, REGULATIONS, AND STANDARDS
 - 2. 05 AIR AND WIPE SAMPLING.
 - 3. 06 TEMPORARY FACILITIES.
 - 4. 07 TEMPORARY ENCLOSURES AND WORK AREA PREPARATION.
 - 5. 08 PRESSURE DIFFERENTIAL & AIR FILTRATION SYSTEM.
 - 6. 09 WORKER PROTECTION.
 - 7. 10 RESPIRATORY PROTECTION.
 - 8. 11 DECONTAMINATION UNITS.
 - 9. 12 MATERIALS AND EQUIPMENT.
- J. Contaminated dust and debris removal work procedures are described in the following specification sections:
 - 1. 15 REMOVAL OF CONTAMINATED DUST, DEBRIS AND MATERIALS.
- K. Decontamination of the Work Area after completion of the contaminated dust removal work is described in the following sections:
 - 1. 13 PROJECT DECONTAMINATION.
 - 2. 14 WORK AREA CLEARANCE

1.03 POTENTIAL DUST HAZARDS:

- A. Characterization of the dust found in the building has indicated detectable levels of asbestos, and Dioxins, as well as various metals, including, but not limited to, Cadmium, Chromium,

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Copper, Lead, Nickel and Zinc. Exposure to these contaminants may cause various adverse health effects. For example, inhalation of dust that is contaminated with heavy metals can elicit a variety of health symptoms, both short and long term, depending upon the duration of exposure, concentration of the contaminants, the specific metals in the dust, and personal factors of the exposed person. Cadmium and lead are systemic toxins that adversely affect major organ systems. Exposure to zinc fumes can result in an illness known as metal fume fever. Therefore, special training of personnel, special equipment and special care must be exercised in the removal and handling of contaminated dust, debris, and materials. Details of these requirements are provided in this design document and all attendant references.

1.04 POTENTIAL MICROBIAL HAZARD:

- A. Water damage in the building has resulted in microbial growth on various building materials, including underneath the hardwood flooring. Exposure to fungal aerosols can cause allergic respiratory diseases (e.g., hypersensitivity pneumonitis and asthma), mycotoxicosis, and/or infections in individuals with pre-existing chronic disease (e.g., compromised immune systems). Therefore, special training of personnel, special equipment and special care must be exercised in the removal and handling of microbial-contaminated materials (see Section 9 Worker Protection, 1.02). Details of these requirements are provided in this design document and all attendant references.

1.05 STOP WORK:

- A. If either the Owner, or Ambient Group, presents a written stop work order, immediately and automatically stop all work. Do not recommence work until authorized in writing by either the Owner, or Ambient Group.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CONTRACTOR USE OF THE SITE:

- A. The site will be accessible on the date specified by the Owner. Dust, debris and contaminated material removal work shall occur as noted in these design documents. No removal shall occur at any other time.
- B. The Contractor shall confine his apparatus, the storage of materials and the operation of his workmen to limits established by law, ordinances, permits or directions of the Owner and shall not unreasonably encumber the premises with his materials. All flammable and/or combustible materials shall be properly identified and can only be stored in areas approved by the Owner. The Contractor shall also obtain permits which may be required for storage of such materials.
- C. The Contractor shall assure that appropriate safety barriers are established to prevent access to Work Areas and that Work Areas are kept neat, clean and safe.
- D. The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

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3.02 STANDARD OPERATING PROCEDURES:

- A.** The Contractor shall develop and implement a written standard procedure for contaminated dust and debris removal to ensure maximum protection and safeguard from aerosol exposure of the workers, visitors, employees, general public, and the environment. The standard operating procedures, which shall be reviewed and approved by the Owner and Ambient Group prior to implementation, shall include:
1. Security from unauthorized entry into the workspace.
 2. Restriction of the Contractor's personnel to the immediate work area and access/egress routes.
 3. Proper protective clothing and respiratory protection for Work Area Workers prior to entering the work space from the outside.
 4. Safe work practices in the Work Area.
 5. Proper exit practices from the work space to the outside through the decontamination facilities.
 6. Packing, loading, transporting, and disposing of contaminated material in a way that minimizes exposure and contamination.
 7. Emergency evacuation procedure for medical and safety .
 8. Compliance with safety procedures as reasonably required by the Owner.
 9. Provisions for effective supervision and personnel monitoring for exposure during the work.
 10. Engineering control systems that minimize exposure to aerosols within and outside the workspace.

3.03 SUMMARY OF WORK:

- A.** The scope of the Project includes the complete removal and disposal of all contaminated materials located within the demised premises on each floor, including core and shell building improvements, at 114 Liberty Street. It is the intent of this project to remove the aforementioned dust, debris and contaminated materials (including furnishings) from the demised tenant premises and demolish and remove tenant improvements and betterments and base-building furnishes, including but not limited to HVAC units and associated duct work, carpeting, gypsum wall and ceiling board, exposed hardwood flooring, pipe insulation, spray-on fireproofing etc.
- B.** The contractor shall file this work as an asbestos abatement project with all appropriate agencies, including all applicable fees.
- C.** The starting and completion dates for all work, including meeting clearance criteria, shall be determined by 114 Liberty Street Condominium Board and conveyed to the Contractor, prior to the bid due date.

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3.04 DESCRIPTION OF WORK:

A. The Contractor shall perform removal of dust, debris and contaminated materials and provide the services as follows:

1. Licensed and certified New York State and New York City asbestos abatement workers and supervisors. In addition, all workers and supervisors must also have a valid certificate of completion from an EPA approved lead worker training course.
2. All applicable notifications, permits and approvals.
3. Work Area preparation, including protection of all surrounding fixtures as described herein.
4. Removal of dust, debris, and contaminated material to include the following:
 - a. The Contractor shall furnish all labor, materials, services, and equipment necessary to facilitate the removal and disposal of all contaminated dust and debris; cleaning, removal and disposal of all remaining tenant fixtures and furnishings; and demolition, removal and disposal of gypsum wall and ceiling board, HVAC units, ductwork, BX electrical cables, spray-on fireproofing, etc. All work is to be performed as described herein.
 - b. Contractor to provide engineering controls to reduce, control and isolate any aerosols caused by the work. Controls may include, but are not limited to, Work Area isolation with plastic sheeting, construction of wooden barriers, installation of HEPA air filtration devices, construction of decontamination chambers and cleaning of the Work Area. All work shall be performed as described herein.
 - c. The Contractor shall furnish all labor, materials, services, appurtenances and equipment necessary for total dust, debris, and contaminated material removal under strict control procedures. Such work shall include, but not necessarily be limited to, the following:
 1. Cleaning and removing of specific non-porous tenant furnishings (i.e., kitchen cabinets and counter tops, etc.), which will be re-installed by another contractor, following completion of the abatement work;
 2. Bagging, removing, and disposing of all porous items (including, but not limited to, gypsum board, spray-on fireproofing, fiberglass batting and pipe insulation, etc.) as asbestos contaminated waste;
 3. Cleaning, removing, and proper disposal of all non-porous items (including, but not limited to, HVAC ductwork, book shelves, appliances, etc.), unless otherwise noted;
 4. Using HEPA vacuuming and wet wipe methods, and/or other appropriate methods as approved by Ambient Group, to remove contaminated dust from any non-porous items that will not be physically removed;

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5. Gross cleaning of the entire area;
 6. Removal and proper disposal of all exposed hardwood flooring, followed by gross cleaning of the sub-flooring using HEPA vacuuming and wet wiping techniques;
 7. Removal, bagging and disposal, as asbestos contaminated waste, of any in-place carpeting;
 8. Fine cleaning of all remaining surfaces.
- d. Complete decontamination of the Work Areas (refer to Section 13 for details).
5. Proper clean up, transport, and disposal of waste. Waste stream shall be segregated into three categories. All porous items, dust and debris as well as rags and cleaning materials, clothing etc. shall be disposed of as asbestos contaminated waste. All non-porous items (i.e. unlined HVAC ducts, BX electrical cables, hardwood flooring, etc.), following a gross cleaning by the General Contractor, shall be disposed of as construction and demolition waste.
 6. If required, Contractor to provide fire/security watch 24-hours, 7-days a week.
 7. Contractor shall have a NYS and NYC licensed asbestos abatement supervisor on site at all times while work is being performed. No work will be allowed whenever there is no supervisor on site.
- B. Sequence of the work shall be as follows:
1. Contractor to provide all required signage on all floors (see Sections 07 and 11 of this document). Post permits in locations as required.
 2. Contractor to construct centrally located personal and waste decontamination chambers.
 3. Contractor to install temporary lighting and power. All electricians to have Restricted Handlers license.
 4. Contractor to install isolation barriers over windows, doors, ceiling penetrations, etc. using two layers of 6-mil polyethylene sheeting and sealed with tape, and protect the floor with two layers of 6-mil reinforced polyethylene sheeting and sealed with tape;
 5. Contractor to position Air Filtration Devices (AFDs) to obtain negative pressure in the Work Area. Final location to be approved by Ambient Group, Inc.
 6. Where required, Contractor to provide wooden isolation/barriers at staircases, elevators, lobbies, corridors and all areas where opening is greater than 32 square feet to restrict entry to the Work Area and facilitate total isolation. All materials shall be fire retardant.
 7. Contractor to construct wooden manifolds at windows to both accept the exhaust from the AFDs and to provide for make-up air via HEPA-filtered, manually controlled dampers. The exterior of the manifolds shall be painted black.

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8. Contractor to ensure and demonstrate that Work Area is under a minimum of 0.02" wc negative pressure via AFDs through use of recording manometers.
9. Contractor to completely remove dust contaminated materials from piping, fittings, ceilings, "I" beams, walls, doors, floors, etc. as shown and/or noted in these documents, and dispose of the materials as designated by these specifications.
10. Contractor to remove any other materials as noted in Contract Documents.
11. Contractor to completely clean the entire Work Area using standard wet-wiping and HEPA-vacuuuming decontamination procedures.
12. Ambient Group, Inc. to certify work area(s) clean using the clearance criteria described in Section 05 – Air and Wipe Sampling, and Section 14 – Work Area Clearance.
13. Contractor shall then remove all isolation barriers and seals, reinstall altered building components and again clean the Work Area.
14. Contractor is responsible for all costs associated with failure of the clearance testing criteria (i.e., re-cleaning and re-testing) as described in Section 05 – Air and Wipe Sampling, and in Section 14 – Work Area Clearance.

END OF SECTION 01

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02 PROJECT COORDINATION

PART 1 - GENERAL

1.01 NOTIFICATIONS:

- A. The Contractor shall make all required notifications associated with this contract to include, but not limited to, those listed in Section 04 Codes, Regulations and Standards.

1.02 ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

- A. Provide a qualified Supervisor for continuous supervision of all work, and to be responsible for the following:
 - 1. Ensure that individuals are wearing proper personal protective equipment and are trained in its use.
 - 2. Maintain entry log records.
 - 3. Surveillance of the work areas at a minimum of once per work shift, to ensure that the workers' personal protective equipment is not torn or ripped and that respiratory protection is worn at all times. Document all inspections in the project log.
 - 4. Ensure that sufficient personal protective equipment is stored in the clean room.
 - 5. Take precautions to prevent heat stress from occurring, such as selecting lightweight protective clothing, reducing the work rate, and providing adequate fluid breaks.

1.03 PRE-PROJECT MEETING:

- A. The Contractor shall attend a pre-project meeting as scheduled. This meeting shall also be attended by the Owner, Ambient Group, and (if they desire) a designated project representative from each Tenant. At this meeting, the Contractor shall present copies of the following items, bound and indexed.
 - 1. Schedules: the Contractor shall provide to the Owner a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. Contractor shall post a copy of all schedules at the site:
 - a. A project schedule stating critical dates of the project including start and completion of (at a minimum) mobilization, Work Area preparation, demolition, gross removal, fine cleaning, inspection, clearance testing and demobilization. The schedule shall be updated weekly.
 - b. A schedule of staffing stating the number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked. Submit all changes in schedule or staffing to the Owner and Ambient Group, Inc.

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1.04 DOCUMENTATION REQUIRED AT WORK SITE:

- A.** The Contractor shall display copies of any required letters of Notification or Permits.
- B.** Additional documentation required of the Contractor and to be available at the job site shall include:
 - 1.** List of emergency telephone numbers to include:
 - a.** Ambient Group, Inc.
 - b.** O.S.H.A.
 - c.** Fire Department.
 - d.** Police Department.
 - e.** Local Hospital.
 - f.** Contractor's Project Supervisor and Firm Principal.
 - g.** Tenant's Designated Project Contact.
 - 2.** The Contractor shall establish written work area emergency procedures and shall have such a plan posted in view. In case of an emergency, decontamination procedures shall not impede emergency procedures.
 - 3.** List of personnel.
 - 4.** A Daily Log of all persons entering the work area, including all visitors. The Log shall include the full name and certification number of all employees, and the time when they enter and exit the worksite.
 - 5.** The Daily Log shall include a record of start and stop times, any work area problems encountered, any corrective action, exact quantities of materials removed, and estimated amount of waste generated.
 - 6.** Copies of Daily Log forms shall be given to the Owner at the end of each week's work.

1.05 COORDINATION OF SUBCONTRACTORS AND OTHER TRADES:

- A.** The Contractor shall work in complete cooperation and coordination with any Subcontractors or any other trades that may be involved in other work within or related to the facility.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 02

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03 DEFINITIONS AND STANDARDS

PART 1 - GENERAL**1.01 DEFINITION OF TERMS:**

1. Abatement: shall mean any and all procedures physically taken to remove contaminated dust and debris from contaminated materials.
2. ACGIH: shall mean the American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, Ohio 45240
3. AIHA: shall mean the American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031.
4. Airlock: shall mean a system for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two Curtained Doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway,
5. Air Sampling: shall mean the process of measuring the airborne concentration of fungal spores, contaminated dust and asbestos fibers, in a known volume of air collected during a specific period of time.
6. Air Sampling Professional: the professional contracted by the Owner or by the Contractor to review and/or conduct air monitoring and analysis schemes. Air sampling, review and evaluation of results should be performed by an individual certified in the Comprehensive Practice of Industrial Hygiene (CIH) who has experience with air sampling. Other acceptable Air Sampling Professionals include industrial hygienists, air sampling technicians or air sampling technologists who have been trained in the selected methodology of sampling and analysis of contaminated dust. This individual shall not be affiliated in any way, other than through this contract, with the Owner or Contractor performing the abatement work.
7. ANSI: shall mean the American National Standards Institute, 1430 Broadway, New York, New York 10018.
8. Asbestos: The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection, both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.
9. ASTM: shall mean the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.
10. Authorized Visitor: shall mean the building owner and his/her representative, and any representative, of a regulatory or other agency having jurisdiction over the project.
11. Building Owner: shall mean the Owner or his authorized representative.

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12. Certified Industrial Hygienist (CIH): shall mean an individual with a minimum of five years experience as an industrial hygienist and who has successfully completed both levels of the examination administered by the American Board of Industrial Hygiene and is current on all certifications.
13. Certified Safety Professional (CSP): shall mean an individual having a bachelor's degree from an accredited college or university and a minimum of four years experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and is current on all certifications.
14. Clean Room: shall mean an uncontaminated area or room that is part of the worker Decontamination Enclosure System with provisions for storage of workers' street clothes and protective equipment.
15. Clearance Monitoring: shall mean the employment of aggressive air sampling techniques with a volume of air collected to determine the airborne fungal spore, metals and asbestos concentration, as well as wipe tests to determine acceptable levels of metals following completion of abatement activity.
16. Curtained Doorway: shall mean a device that consists of at least three overlapping sheets of plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.
17. Decontamination Enclosure System: shall mean a series of connected rooms; separated from the work area and from each other by air locks, for the decontamination of workers, materials, waste containers, and equipment.
18. Design Documents: shall mean abatement specification and all the sections and appendices referenced herein.
19. EPA: shall mean the Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460.
20. Equipment Room: shall mean contaminated area or room that is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.
21. Ground fault circuit interrupter: A circuit breaker that is sensitive to very low levels of current leakage from a fault in an electrical system.
22. HVAC: Heating, ventilation and air conditioning system.
23. HEPA Filter: shall mean a high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles greater than 0.3 micrometers mass median aerodynamic equivalent diameter.
24. Holding Area: shall mean a chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.

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25. Industrial Hygiene: shall mean that science and art devoted to the recognition, evaluation, and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among worker or among the citizens of the community.
26. Industrial Hygienist: shall mean an individual having a college or university degree or degrees in Engineering, Chemistry, Physics or Medicine, or related Biological Sciences who, by virtue of special studies and training, has acquired competence in industrial hygiene. Such special studies and training must have been sufficient in all of the above cognate sciences to provide the abilities:
 - a) To recognize the environmental factors and to understand their effect on people and their well being; and
 - b) To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well being; and
 - c) To prescribe methods to eliminate, control, or reduce such stresses when necessary to alleviate their efforts.
27. MSHA: shall mean the Mine Safety and Health Administration, Approval and Certification Center, PO Box 251, Route 1, Philadelphia, WV 26059.
28. Negative Air Pressure Equipment: shall mean a portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the work area.
29. NIOSH: shall mean the National Institute for Occupational Safety and Health CDC - NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226.
30. Occupied Area: shall mean an area of the worksite where abatement is not taking place and where personnel or occupants normally function or where workers are not required to use personal protective equipment.
31. OSHA: shall mean the Occupational Safety and Health Administration, 200 Constitution Avenue NW, Washington DC 20210.
32. Person: shall mean any individual, partnership, company, corporation, association, firm, organization, governmental agency, administration, or department, or any other group of individuals, or any officer or employee thereof.
33. Personal Protective Equipment (PPE): shall mean appropriate protective clothing, gloves, eye protection, footwear, head gear, and approved respiratory protection acceptable to the Department.
34. Physician: shall mean a person licensed or otherwise authorized under Article 131 Section 65.22 of the New York State Education Law.
35. Plasticize: shall mean to cover floors and walls with plastic sheeting as herein specified or by using spray adhesive.

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36. Porous: shall mean a material with pores or tiny holes that can hold dust.
37. Professional Engineer (PE): shall mean an individual having at a minimum a bachelor's degree in engineering from an accredited college or university with four years acceptable experience as an engineer and who has successfully completed both levels of the professional engineers examination administered by the State of New York Department of Education, Division of Professional Licensing.
38. Quantitative Fit Test: shall mean the individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator facepiece. Three of the most popular methods include: 1) irritant smoke test; 2) odorous vapor test; 3) taste test.
39. REL: Recommended Exposure Limit. As defined by the National Institute for Occupational Safety and Health, an airborne time weighted average concentration to which a person may be exposed to for up to a 10-hour workday during a 40-hour work week.
40. Registered Architect (RA): shall mean an individual having at a minimum a bachelor's degree in architecture from an accredited college or university with three years acceptable experience as an architect and who has successfully completed both levels of the architects registration examination administered by the State of New York Department of Education, Division of Professional Licensing.
41. Removal: shall mean the stripping of any contaminated materials from surfaces or components of a facility or taking out structural components of a facility.
42. Shower Room: shall mean a room between the Clean Room and the Equipment Room in the worker Decontamination Enclosure System with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
43. Staging Area: shall mean the work area near the waste transfer airlock where containerized contaminated waste has been placed prior to removal from the work area.
44. TLV: Threshold Limit Value. As defined by the American Conference of Governmental Industrial Hygienists (ACGIH), an airborne level of a substance to which a person may be exposed without exhibiting symptoms of toxicity.
45. Washroom: shall mean a room between the Work Area and the Holding Area in the equipment Decontamination Enclosure System where equipment and waste containers are wet cleaned and/or HEPA-vacuumed prior to disposal.
46. Wet Cleaning: shall mean the removal of dust from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water.
47. Work Area: shall mean designated rooms, spaces or areas of the building or structure where abatement activity take(s) place.
48. Work Area Worker: shall refer to any person physically performing clean-up work in the work area, possessing applicable certifications and training.
49. Worker: shall mean asbestos handler and/or asbestos handler supervisor, or approved equivalent.

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50. Worker Decontamination Enclosure System: shall mean that portion of a decontamination enclosure system designed for controlled passage of workers and other individuals and authorized visitors, consisting of a clean room, a wash room, and an equipment room separated from each other and from the work area by airlocks and curtained doorways.
51. Work Site: shall mean premises where abatement activity is taking place and may be composed of one or more work areas.

1.02 INDUSTRY STANDARDS:

- A. Except where these Design Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Design Documents. Such standards are made a part of the Design Documents by reference. Individual sections indicate which codes and standards the Contractor must keep available at the Project Site for reference.
- B. Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced. Refer any requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent, to Ambient Group, Inc. for a decision before proceeding.
- C. Each entity engaged in work on the Project is required to be familiar with industry standards applicable to that entity's work activity. Copies of applicable standards are not bound with the Design Documents.
1. Where copies of standards are needed for performance of a required work activity, the Contractor shall obtain copies directly from the publication source.

1.03 SUBMITTALS:

- A. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work. This includes landfill and hauling permits and other documentation of disposal of contaminated waste.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

— END OF SECTION 03 —

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04 CODES, REGULATIONS, AND STANDARDS

PART 1 - GENERAL

1.01 CODES AND REGULATIONS:

- A.** All work under this Design Document shall be done in accordance with all applicable Federal, State and local regulations, standards and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.
- B.** The most recent edition of any relevant regulation, standard, document or codes shall be in effect. Where conflict among the requirements or with this design exists, the most stringent requirements shall be utilized.
- C.** Copies of all standards, regulations, codes and other applicable documents, including this design shall be available at the worksite in the clean change area of the worker decontamination system. These documents will be supplied by the Contractor. Applicable regulations include but are not limited to the following:
- D.** Occupational Safety and Health Administration (OSHA)
 - 1.** Title 29 Code of Federal Regulations Section 1910.134 - General Industry Standard for Respiratory Protection.
 - 2.** Title 29 Code of Federal Regulations Section 1910.1020 - Access to Employee Exposure and Medical Records.
 - 3.** Title 29 Code of Federal Regulations Section 1910.1200 - Hazard Communication.
 - 4.** Title 29 Code of Federal Regulations Section 1910.145 - Accident Prevention Signs and Tags.
- E.** Environmental Protection Agency (EPA)
 - 1.** Title 40 Code of Federal Regulations Part 61.145 - Standard for Demolition and Renovation: Notification Requirements.
- F.** State Requirements: Abide by any applicable state administrative codes, rules and/or statutes that may apply.
- G.** Local Requirements: Abide by any local requirements that may apply.

1.02 STANDARDS:

- A.** Standards that may apply to abatement work or hauling and disposal of waste materials include, but are not limited to, the following:
 - 1.** American National Standards Institute (ANSI)
 - a.** ANSI Z88.2 " Respiratory Protection".

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- b. ANSI Z9.2 "Fundamental Governing the Design and Operation of Local Exhaust Ventilation Systems".
 - c. ANSI Z41.1 "Personal Protection – Protective Footwear".
 - d. ANSI Z87.1 "Occupational and Educational Eye and Face Protection".
 - e. ANSI Z89.1 "Requirements for Industrial Head Protection".
- 2. Underwriters Laboratories, Inc. (UL)
 - a. UL 586 "High Efficiency, Particulate, Air Filter Units".
 - b. UL 467 "Grounding and Bonding Equipment".
 - c. UL 723 "Test for Surface Burning Characteristics of Building Materials".
- B. Federal Requirements: Which govern asbestos abatement work or hauling and disposal of waste materials include but are not limited to the following:
 - 1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) including but not limited to:
 - a. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations.
 - b. Respiratory Protection Title 29, Part 1910, Section 134 of the Code of Federal Regulations.
 - c. Construction Industry Title 29, Part 1926, of the Code of Federal Regulations.
 - d. Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 1020 of the Code of Federal Regulations.
 - e. Hazard Communication Title 29, Part 1910, Section 1200 of the Code of Federal Regulations.
 - f. Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the Code of Federal Regulations.
 - 2. U.S. Department of Transportation, including but not limited to:
 - a. Hazardous Substances Title 49, Part 171 and 172 of the Code of Federal Regulations.
- 3. Environmental Protection Agency (EPA):
 - a. Regulations for Asbestos (Code of Federal Regulations Title 40, Part 61, Subpart M).

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- b. Guidance for Controlling Friable Asbestos Containing Materials in Buildings.
 - c. Mold Remediation in Schools and Commercial Buildings (EPA 402-I-01-001).
- C. State Requirements: which govern asbestos abatement work or hauling and disposal of waste materials include but are not limited to the following:
 - 1. New York State Department of Environmental Conservation (DEC). Regulations regarding waste collector registration Title 6, Part 364 of the New York State Official Compilation of Codes, Rules and Regulations 0 6 NYCRR 364.
 - 2. An annual "Industrial Waste Hauler Permit" specifically for asbestos-containing waste to disposal site.
 - 3. New York State Department of Labor Asbestos Industrial Code Rule #56 Title 12, Part 56 of the New York State Official Compilation of Codes, Rules and Regulations - 12 NYCRR 56.
 - 4. New York State Department of Labor Asbestos or Products Containing Asbestos: Licensing Article 30, Sections 900-911 of the New York State Labor Law Created by Laws of 2986, Chapter 775.
 - 5. New York State Department of Health Asbestos Safety Program Requirements Title 10, Part 73, Chapter II of the New York State Official Compilation of Codes, Rules and Regulations - 10 NYCRR 73.
 - 6. New York State Department of Health Laboratory Accreditation Requirements Title 10, Parts 55.2 and 55.3 of the New York State Official Compilation of Codes, Rules and Regulations - 10 NYCRR 55.2 & 55.3
 - 7. New York State Department of Health Laboratory Accreditation Requirements, Article 5, Chapter I, Section 502 of the New York State Public Health Laws.
- D. LOCAL REGULATIONS: Which govern asbestos abatement work or hauling and disposal of waste materials include but are not limited to the following:
 - 1. New York City Local Law 70, Local Law 80, and RCNY title 15.
 - 2. New York City Department of Health - Guidelines on Assessment and Remediation of Fungi in Indoor Environments.

1.03 LICENSES:

- A. Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other government regulated activity relative to the work of this contract.

1.04 POSTING AND FILING OF REGULATIONS:

- A. Post all notices required by applicable federal, state and local regulations. Maintain two (2) copies of applicable federal, state and local regulations and standards. Maintain one copy of

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each at the job site. Keep on file in the Contractor's office one copy of each.

1.05 SUBMITTALS:

- A. Before start of work, submit the following to the Owner and Ambient Group, Inc. for review. No work shall begin until these submittals are received.
- B. Submit proof satisfactory to the Owner, and Ambient Group, Inc. that any required permits have been obtained, and that site location and arrangements for transport and disposal of contaminated waste materials have been made. Submit hauling registration and landfill permits to Owner.
- C. Submit all documentation satisfactory to the Owner and Ambient Group, Inc. that the Contractor's employees, including foremen, supervisors and any other company personnel or agents who may be exposed to contaminated dust or debris or who may be responsible for any aspects of abatement activities, have received adequate training that includes, at a minimum, information regarding hazard communication, respiratory protection and heat stress.
- D. Submit documentation from a physician that all employees or agents who may be exposed to contaminated dust have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g. - high temperature, humidity, chemical contaminants) that may impact the employees' ability to perform work activities.
- E. Submit manufacturer's certification that HEPA-vacuums, negative pressure ventilation units and other local exhaust ventilation equipment conform to ANSI Z9.2.
- F. Submit maintenance logs for all equipment scheduled for use in any abatement areas.
- G. Document NIOSH approvals for all respiratory protective devices utilized onsite. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.
- H. Submit documentation of respirator fit testing for all of the Contractor's employees and agents who must enter the work area. This fit testing shall be in accordance with qualitative procedures as detailed in the OSHA Safety & Health Standards 29 CFR 1910.1001, Appendix C, Qualitative Fit Test Protocol.
- I. Name and address of the proposed monitoring testing laboratories, copies of their certifications (including AIHA EMLAP for the microbial samples, and NYS ELAP for all other samples), and a written description of the proposed method of collecting, analyzing and reporting of air samples.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 04

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05 AIR AND WIPE SAMPLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Air and Wipe Sampling for Work Area clearance is also described in Section 14 Work Area Clearance.

1.02 DESCRIPTION OF THE WORK:

- A. This section describes work being performed by the Owner. This work is not in the Contract Sum.
- B. This section describes air and wipe sampling carried out by the Owner to verify that the building premises beyond the work area and the outside environment remains uncontaminated.
- C. All sampling described in this section shall be performed by qualified industrial hygienists, who shall also be trained and certified as Asbestos Air Sampling Technicians, and shall be conducted under the guidance and supervision of a Certified Industrial Hygienist (CIH).
- D. Any air monitoring that is required by OSHA is the responsibility of the Contractor and is not covered in this section.

1.03 AIR MONITORING DURING WORK:

- A. The purpose of the Owner's air monitoring is to detect faults in the work area isolation such as:
 - 1. Contamination of the premises outside of the work area with contaminated dust and debris.
 - 2. Failure of filtration systems or rupture in the differential pressure system.
- B. Should any of the above occur, immediately cease abatement activities until the fault is corrected. Do not recommence work until authorized in writing by Ambient Group, Inc.

1.04 STOP ACTION LEVELS:

- A. When visible emissions occur outside the work area, or any air sample has indicated a determinant level of fiber concentrations equal to or greater than 0.01 f/cc by Phase Contrast Microscopy (PCM) via the NIOSH 7400 method, work shall stop for inspection. Ambient Group, Inc. shall inspect and determine the source of the high reading and notify the Contractor immediately.
-
- B. If the high reading was the result of a failure of Work Area isolation measures, initiate the following procedures:
 - 1. Clean the affected area in accordance with Section 13 Project Decontamination.

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2. Perform air sampling in the affected area to confirm the effectiveness of the decontamination procedures. If fiber concentrations are still elevated, repeat the decontamination procedures.
- C. If the high reading was the result of other causes, initiate corrective action as determined by Ambient Group, Inc.

1.05 SAMPLING AND ANALYTICAL METHODS:

- A. The following methods will be used by the Owner in sampling and analyzing samples used to collect air or wipe samples to determine the levels of airborne or surface contaminants.
 1. Wipe samples shall be collected in accordance with ASTM E1728-02 and analyzed for metals, specifically Cadmium, Chromium, Copper, Lead, Nickel, and Zinc, in accordance with the NIOSH 7300M method, using Inductively Coupled Argon Plasma atomic emission spectroscopy (ICP).
 2. Wipe samples shall be collected in accordance with ASTM D6661-01 and analyzed for Dioxins/Furans in accordance with the EPA SW-846-8290 method, using High Resolution GC/MS.
 3. Air samples for asbestos structures shall be collected and analyzed in accordance with the method outlined in EPA 40 CFR Part 763, using Transmission Electron Microscopy (TEM).

1.06 SCHEDULE OF SAMPLES:

- A. Frequency and duration of the air sampling during removal of dust and debris shall be representative of the actual conditions during the Work. The size of the project area will be a factor in the number of samples required to monitor the abatement activities. The following minimum schedule of airborne fiber samples, as determined by PCM, shall be required daily during the work shift. Area sampling shall be performed at the following locations:
 1. Two area samples outside the project work area in uncontaminated areas of the building, remote from the decontamination facilities.
 - a. Primary location selection shall be within 10 feet of isolation barriers
 - b. Where negative ventilation exhaust ducting runs through uncontaminated building areas, one of the area samples will be required in these areas to monitor any potential contaminant migration.
 - c. Where adjacent non-work areas do not exist, a sample shall be taken elsewhere in the building.
 2. One area sample within the uncontaminated entrance to each worker decontamination and waste decontamination enclosure system.
- B. Post-abatement clearance air sampling shall include the following number of samples:
 1. A minimum of five (5) air samples, plus one additional sample for every 5,000 square

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feet of floor space over 25,000 square feet, plus appropriate blanks, shall be collected both inside and outside each work area and analyzed for Asbestos.

2. Clearance air sampling shall be performed utilizing aggressive methods as described below:
 - a. Before starting the pumps, the exhaust of forced-air equipment shall be directed against all walls, ceilings, floors, ledges and other surfaces in the work area. This pre-sampling agitation shall continue for at least five minutes per 1,000 square feet of floor space.
 - b. At least one 20-inch (minimum sized) fan shall be placed in the work space and operated at slow speed while pointing towards the ceiling. A minimum of one fan per 10,000 cubic feet of room space shall be used.
 3. Clearance wipe sampling shall not commence until at least one hour after the completion of the air sampling and the removal of the fans from the work area.
- C. Post-abatement clearance wipe sampling shall include the following number of samples:
1. At least one wipe sample for every 10,000 square feet of floor space, with a minimum of three (3) samples, plus appropriate blanks, shall be collected in each work area and be analyzed for both Dioxins/Furans and for the previously listed metals.
- D. Monitoring requirements and procedures are as follows:
1. The sampling zone for indoor air samples shall be representative of the building occupants' breathing zone.
 2. If possible, outdoor ambient and baseline samplers should be placed about 6 feet above the ground surface in reasonable proximity to the building and away from obstructions and drafts that may unduly affect airflow.
 3. Air sampling equipment shall not be placed in corners of rooms or near obstructions such as furniture.
 4. Samples shall have a chain of custody record.
- E. Work Area Clearance
1. Acceptance Air Clearance Criteria: Decontamination of the work site meets the requirements of this test when the following airborne concentrations are achieved:

Parameter	Clearance Level	Note
Asbestos	70-s/mm ²	As set forth in the AHERA standard

2. Acceptable Surface Clearance Criteria: Decontamination of the work site meets the requirements of this test when the following surface concentrations are achieved:

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Parameter	Clearance Level
Cadmium	<4.7 ug/ft ²
Chromium	<465 ug/ft ²
Copper	<929 ug/ft ²
Lead	<25 ug/ft ²
Nickel	<14 ug/ft ²
Zinc	<4645 ug/ft ²
Dioxins/Furans	<0.37 ng/ft ^{2**}

** - 2,3,7,8-TCDD toxicity equivalents (TEQ)

F. Clearance Failure Criteria and Response Actions

1. If any of the air or wipe samples fail to meet the specified clearance criteria, then the entire work area shall be re-cleaned and tested for only the specific contaminant(s) that failed.
2. The clean up and testing for the parameter(s) that failed shall be repeated until compliance is achieved. The Contractor shall be responsible for any additional cost incurred, including the Owner's air monitoring and wipe sampling, due to test results exceeding the limits prescribed in Item E.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 PERSONAL MONITORING:

- A. The Owner shall not perform air monitoring to meet the Contractor's OSHA requirements for personnel sampling or any other purpose. This testing is the sole responsibility of the Contractor and shall be included in the Contract Sum.

END OF SECTION 05

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06 TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS:

- A. Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2.02 SCAFFOLDING:

- A. All scaffolding shall be designed and constructed in accordance with OSHA (29 CFR 1926/1910), Municipal Building Code, and any other applicable federal, state, and local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable. All scaffolding and components shall be capable of supporting without failure of a minimum of 4 times the maximum intended load, plus an allowance for impact. All scaffolding and staging must be certified by a licensed professional engineer.
- B. Equip rungs of all metal ladders, etc., with an abrasive, non-slip surface.
- C. Provide non-skid surface on all scaffold surfaces subject to foot traffic. Scaffold ends and joints shall be sealed with tape to prevent penetration of contaminated dust.

2.03 WATER SERVICE:

- A. Temporary Water Service Connection: All connections to the Owner's water system shall include back flow protection. Valves shall be temperature and pressure rated for operation of the temperature and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping fittings/valves shall be promptly repaired and or replaced as required.
- B. Water Hoses: Employ new heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Enclosure Unit. Provide fittings as required for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles, and equipment.

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- C. **Hot Water Heater:** If needed, provide appropriately sized UL rated electric water heaters to supply hot water for Personnel Decontamination Enclosure System Shower(s). Activate each water heater from 30 AMP Circuit breakers located within the Decontamination Enclosure sub-panel. Provide relief valve(s) compatible with water heater operations, pipe relief valve down to drip pan at floor level with type "L" copper lining. Drip pans shall be 6" deep and securely fastened to water heater. Wiring of the water heater shall be in compliance with NEMA, NECA, and UL standards.
- D. **Hot Water:** May be secured from the building hot water system, provided back flow protection is installed at point of connection as described in this section under Temporary Water Service connection, and if authorized by the Owner.

2.04 ELECTRICAL SERVICE:

- A. **General:** Comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.
- B. **Temporary Power:** Provide service to decontamination unit sub-panel with minimum 60 AMP, 2 pole circuit breaker, or fused disconnect connected to the building's main distribution panel. Sub-panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the Work.
- C. **Voltage Differences:** Provide identification warning signs at power outlets that are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.
- D. **Ground Fault Protection:** Equip all circuits for any purpose entering work area with ground fault circuit interrupters (GFCI). Locate GFCIs exterior to work area so that all circuits are protected prior to entry to the work area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or otherwise required by NEC, OSHA, or other authority. Locate in panel exterior to work area.
- E. **Power Distribution System:** Provide circuits of adequate size and proper characteristics for each use. In general, run wiring overhead, and rise vertically in such a manner to be least subject it to damage from operations.
- F. **Temporary Wiring:** In the work area, temporary wiring shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Provide liquid tight enclosures or boxes for all wiring devices. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors.
- G. **Electrical Power Cords:** Use only grounded extension cords; use hard service cords where exposed to traffic and abrasion. Use single lengths of cords only.

2.05 FIRST AID:

- A. **Comply with all governing regulations and recognized recommendations within the construction industry.** A First Aid kit, in compliance with ANSI Z308.1, appropriate for the size of the working crew, shall be available at the project site at all times.

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- A. Provide type "A" fire extinguisher for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other areas, provide type "ABC" dry chemical extinguisher of NFPA recommended types for the exposure in each case. All fire extinguisher shall comply with the applicable recommendations of NFPA Standard 10, "Standard for Portable Extinguisher". Provide a minimum of four (4) fire extinguisher in each work area, one (1) in the equipment room of each decontamination unit and one (1) outside the work area in each clean room or directly outside the same. Locate fire extinguishers where they are most effective for their intended purpose, but do not exceed seventy-five feet (75') between fire extinguishers within the work area.

PART 3 - EXECUTION**3.01 SCAFFOLDING:**

- A. Clean, as necessary, debris from non-slip surfaces.
- B. At the completion of abatement work clean all construction aids within the work area, wrap in one layer of 6 mil polyethylene sheet, and seal before removal from the Work Area.

3.02 INSTALLATION, GENERAL:

- A. Use qualified tradesmen, with valid restricted asbestos handling licenses (as required), for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the work.
- B. Require that tradesmen accomplishing this work be licensed as required by local authority for the work performed.
- C. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.
- D. The Contractor shall coordinate with the Owner for connection to existing building utilities. No Connections shall be executed without prior approval of the Owner.

3.03 WATER SERVICE:

- A. Water connection to the Owner's existing potable water system is the responsibility of the Contractor. Install using vacuum breakers or other backflow preventer as required by local authority. Hot water shall be supplied at a minimum temperature of 100°F. Supply hot and cold water to the Decontamination Unit in accordance with Section 11. In addition, water shall be supplied for all worksite uses.
- B. Maintain hose connections and outlet valves in leak proof condition. Where finished work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

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3.04 ELECTRICAL SERVICE:

- A. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the abatement period.
- B. Provide temporary electrical panel sized and equipped to accommodate all electrical equipment required by the work. Connect temporary panel to existing building electrical system. Protect with circuit breaker or fused disconnect. Locate temporary panels as directed by the Owner.
- C. Provide circuits of adequate size and proper characteristics for each use. In general, run wiring overhead and rise vertically where wiring will be least exposed to damage from work operations.
- D. Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size, located in the temporary panel. Do not use outlet type GFCI devices.
- E. Temporary wiring in the Work Area shall be type UF non-metallic sheathed cable. Provide liquid tight enclosures or boxes for wiring devices.
- F. Provide sufficient branch circuits as required by the work. All branch circuits are to originate at the temporary electrical panel.
- G. Provide sufficient branch circuits as required by the Owner for the collection of his air samples.

3.05 TEMPORARY LIGHTING:

- A. Lock out and tag all existing power to lighting circuits in the Work Area as described in Section 07 Temporary Enclosures. Unless specifically noted otherwise, existing lighting circuits to the Work Area are not to be used. All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel(s) as described above.
- B. Provide lighting in areas where work is being performed as required to supply a 100-foot candle minimum light level.
- C. Provide lighting in any area being subjected to a visual inspection as required to supply a 100-foot candle minimum light level.
- D. Provide lighting in the Decontamination Unit as required to supply a 50-foot candle minimum light level.
- E. Provide sufficient lighting circuits as required by the work. All lighting circuits are to originate at temporary electrical panel(s).
- F. Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel.

3.06 FIRE EXTINGUISHERS:

- A. Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers". Provide a minimum of four (4) fire extinguisher in each work area, one (1) in the

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equipment room of each decontamination unit and one (1) outside the work area in each clean room or directly outside the same. Locate fire extinguishers where they are most effective for their intended purpose, but do not exceed seventy-five feet (75') between fire extinguishers within the work area. Fire extinguishers shall be checked daily for the proper pressure.

END OF SECTION 06

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07 TEMPORARY ENCLOSURES & WORK AREA PREPARATION

PART 1 - GENERAL (not applicable)

PART 2 - PRODUCTS

2.01 SHEET PLASTIC

- A. Provide flame-resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Methods of Fire Tests for Flame Resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick, frosted or black, as indicated.
- B. Provide translucent, nylon reinforced or woven polyethylene, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Methods of Fire Tests for Flame Resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick, frosted or black, as indicated.

2.02 MISCELLANEOUS MATERIALS:

- A. Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene, without damage to existing finishes, and capable of adhering under both dry and wet conditions, including use of amended water.
- B. Provide spray adhesive in aerosol cans that is specifically formulated to stick tenaciously to sheet polyethylene.

PART 3 - EXECUTION

3.01 SEQUENCE OF WORK:

- A. Prior to the start of any prep work, the Contractor shall employ skilled tradesmen for the following work:
 - 1. Disable all ventilating systems or other systems bringing air into, or exhausting air out of, the Work Area. Disable system by disconnecting wires and/or removing circuit breakers, by lockable switch or other positive means to ensure against accidental re-starting of equipment.
 - 2. Lockout power to the Work Area by switching off all breakers and removing them from panels or by switching and locking entire panel. Label panel(s) with the following notation: **"DANGER CIRCUIT BEING WORKED ON"**.
 - 3. Lock out power to circuits running through Work Area whenever possible by switching off and removing breakers from panel. If circuits must remain live, the Owner shall notify the Contractor in order that he may secure a variance. Protect any conduit or wires to

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remain and label all active circuits at intervals of 3'0" on center with tags having the following notation: **"DANGER LIVE ELECTRIC CIRCUIT. ELECTROCUTION HAZARD"**

3.02 EMERGENCY PRECAUTIONS:

- A. The Contractor shall prepare a Health and Safety plan for emergencies, including fire, accident, power failure, negative air system failure, or any other event that may require modification or abridgement of decontamination or Work Area isolation, which must be reviewed and approved by Ambient Group, Inc. prior to the start of work. Note that nothing in this Specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.
- B. The Contractor shall provide barricades and adequate protection to safely prevent accidental entrance to the abatement area by any non-authorized personnel.
- C. First aid shall comply with the governing regulations and all recognized recommendations within the construction industry.

3.03 RESPIRATORY AND WORKER PROTECTION:

- A. Before proceeding beyond this point in providing Temporary Enclosures:
 - 1. Provide Worker Protection per Section 09.
 - 2. Provide Respiratory Protection per Section 10.
 - 3. Provide Personnel Decontamination Unit per Section 11.

3.04 EMERGENCY EXITS:

- A. Provide emergency exits and emergency lighting as set forth below:
 - 1. At each existing exit door from the Work Area, provide the following means for emergency exiting:
 - a. Arrange exit door so that it is secure from outside the Work Area but permits exiting from the Work Area.
 - b. Mark outline of door on Primary and Secondary Barriers with luminescent paint at least 1" wide. Hang a razor knife on a string beside the outline. Arrange Isolation and Primary barriers so that they can be easily cut with one pass of razor knife. Paint the words "EMERGENCY EXIT" inside the outline with luminescent paint in letters at least one foot high and 2" thick with an orange or red arrow pointing towards the exit.

3.05 WORK AREA PREPARATION:

- A. Preparation of the Work Areas shall proceed in the following sequence:
 - 1. The Contractor shall construct barriers segregating the Work Area from non-Work Areas, where required.

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- a. The barriers shall be minimum 2" x 3" stud construction at 16" centers. The outer walls shall be 1/2" finished plywood, new. All materials shall be fire retardant.
 - b. The barrier shall extend from floor to slab ceiling and shall be flush.
 - c. All seams, on both the interior and exterior, shall be caulked, sealed, and made airtight. Apply plastic sheeting, two (2) layers, 6 mil, to interior surface, stapled and taped securely in place.
2. The barriers shall remain in place for the duration of the project.
 3. At the completion of the project, the barrier(s) shall be removed by the Contractor, the area(s) cleaned via HEPA-vacuuming and wet-wiping techniques, and to their original condition.
 4. The area where contaminated dust is to be removed is to be isolated from other portions of the building.
 5. The entire Work Area shall receive plastic preparation as described herein.
 6. The Contractor shall post an approximately 20-inch by 14-inch manufactured caution sign at each entrance to the work area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA**

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

7. The Contractor shall post an approximately 10-inch by 14-inch manufactured sign at each entrance to each work area displaying the following legend with 3/4-inch block letters:

**NO FOOD, BEVERAGES OR TOBACCO PERMITTED
ALL PERSONS SHALL DON PROTECTIVE
CLOTHING (COVERINGS) BEFORE
ENTERING THE WORK AREA**

**ALL PERSONS SHALL SHOWER IMMEDIATELY
AFTER LEAVING WORK AREA AND BEFORE
ENTERING THE CLEAN ROOM**

8. The Contractor shall thoroughly clean all interior window surfaces, as well as the exterior window sills, utilizing HEPA-vacuuming and wet-wiping techniques.

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9. The Contractor shall isolate the Work Area for the duration of the work by completely and individually sealing off all openings, windows, skylights, etc. with two (2) layers of polyethylene sheeting.
10. The clean side of these barriers shall be monitored by Ambient Group, Inc. If at any time airborne concentrations for any of the target metals exceed their respective exposure limits and/or airborne fiber concentrations are equal to or exceed 0.01 fibers/cc, the Contractor shall halt all operations and shall be required to completely clean all areas as directed by the Owner.
11. The contractor shall completely cover the floor of the Work Area with two (2) layers of reinforced polyethylene sheeting.
12. All polyethylene sheeting shall be securely attached to walls, floors, etc. with quality "duct tape", glue, and/or mechanical support.
13. The Contractor shall install a sufficient number of negative air filtration units in the Work Area, as well as window mounted HEPA filtered manifold systems for make-up air, to provide both a minimum of four (4) air changes per hour and 0.02" wc negative pressure.
14. The removal operations will not begin until the Work Area has been inspected and approved by Ambient Group, Inc. A minimum differential pressure between the Work Area and adjacent occupied spaces shall be negative 0.02 inches water gauge. The contractor shall install a manometer by the personal decontamination chamber in order to verify and monitor the pressure differential.

END OF SECTION 07

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08 PRESSURE DIFFERENTIAL & AIR FILTRATION SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS:

- A. Isolate the Work Area from all adjacent areas or systems of the building with a pressure differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the Work Area.
- B. Continuously maintain the Work Area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This pressure differential, when measured across any physical or isolation barrier, must equal or exceed a static pressure of 0.02 inches of water.
- C. Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the Work Area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. The number of units will increase with increased make-up air or leaks into the Work Area.
- D. In addition to the required pressure differential, ensure that a sufficient amount of filtered air is exhausted from the Work Area to provide a minimum of four (4) air changes per hour.

1.02 MONITORING:

- A. Continuously monitor and record the pressure differential between the Work Area and the building outside of the Work Area with a monitoring device incorporating a continuous recorder (e.g. - strip chart).
- B. Provide monitoring of equipment during periods of no work where containment and negative air units are operational.
- C. Contractor shall maintain records of monitoring until directed by the Owner. Records shall be available for review at the Owner's request.

1.03 SUBMITTALS:

- A. Submit design of pressure differential system to Ambient Group, Inc. for review prior to the start of work. Do not begin work until the submittal is returned with Ambient Group Inc. approval.

PART 2 - PRODUCTS

2.01 HEPA-FILTERED FAN UNITS:

- A. Air Filtration Devices shall be equipped with High Efficiency Particulate Air (HEPA) filtration systems and shall be approved by and listed with Underwriter's Laboratory. Air filtration devices shall be "Microtrap" as manufactured by Asbestos Control Technology of Maple Shade, NJ or

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"RAM AIR 2M" as manufactured by Aramsco of Thorofare, NJ, or "Environmental Ltd., 300" as manufactured by Torchcross Agency Environmental, Hagerstown, MD or approved equal.

PART 3 - EXECUTION

3.01 PRESSURE DIFFERENTIAL ISOLATION:

- A. The Contractor shall coordinate this item with the Building Owner at the commencement of work.
- B. In all areas, an alternate ventilation system must be installed. Portable Air Filtration Devices, capable of moving large quantities of air through a HEPA (High Efficiency Particulate Air filter capable of 99.97% efficiency at 0.3 microns) are to be installed. Each unit shall be serviced by a dedicated minimum 115V-20A circuit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed under requirements of Section 06, Temporary Facilities. Do not use existing branch circuits to power fan units.
- C. Provide brand new AFDs, or provide on-site certificate of the HEPA filters. Certify that the AFDs have been tested via the DOP smoke challenge procedure and shall conform to GSA's Federal Standard 209B; ANSI N101.1; and MIL-F 51068E, as published by the US Army.
- D. The Contractor shall size each zone area, provide the number of AFDs to guarantee no less than four (4) complete air changes per hour during contaminated dust and debris removal and clean-up.
 - 1. Portable AFD use and positioning shall conform to ANSI Z9.2 and is to be coordinated with Ambient Group, Inc.
 - 2. The Contractor shall provide a minimum of one (1) additional AFD unit for each Work Area as a back-up.
- E. Locate fan unit(s) so that makeup air enters the Work Area primarily through decontamination facilities and traverses the Work Area as much as possible. This may be accomplished by position the HEPA filtered fan unit(s) at a maximum distance from the worker access opening or other makeup air sources.
- F. Vent HEPA filtered fan units to outside of building so that:
 - 1. At no time shall the negative pressure ventilation units exhaust within 40 feet of a receptor, or adversely affect the air intake ports, louvers, or entrances for the building or adjacent buildings.
 - 2. Heavy duty ducting or equivalent, or larger, shape and dimension as that of the negative pressure ventilation exhaust port shall be used to exhaust to the outside of the structure.
 - 3. All ducting shall be sealed and braced or supported to maintain airtight joints.
- G. Should it not be feasible for the Contractor to exhaust to the building exterior, the following alternative is possible:
 - 1. Vent each HEPA filtered fan unit to inlet of second unit, compatible with the primary

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unit's capacity. The area receiving the exhaust shall have sufficient, non-recycling exhaust capacity to the outside of the structure. Vent second unit to a controlled area in the building, as approved by Ambient Group, Inc.

2. Ensure that controlled area is isolated from balance of building by isolation barriers at all times that units are in operation.
 3. Routine smoke testing, air monitoring and daily inspections shall be performed by the Supervisor to ensure that the ducting does not release fibers, dust, or debris into uncontaminated building areas.
 4. Mount units to exhaust directly or through disposable ductwork.
- H. Use ductwork and fittings of the same diameter or larger than discharge connection on fan unit.
- I. Use new inflatable, disposable plastic ductwork in lengths not greater than 100 feet.
- J. Use new spiral wire-reinforced flex duct in lengths not greater than 50 feet.
- K. The negative pressure system must produce a minimum pressure differential of negative 0.02 inches of water (during removal) as measured between the Work Area and the adjacent spaces. The contractor is required to maintain the negative pressure system as stated. In the event that the pressure differential falls below the stated pressure levels, all work shall stop until adequate pressure levels are re-established.
- L. Ambient Group, Inc. shall measure the pressure differential and confirm negative pressure through manometer measurement, recording devices, and smoke testing PRIOR to any demolition work and removal.
- M. Ambient Group, Inc. reserves the right to test air volume capacity of AFD units to verify actual CFM exhausted from the work zone.

END OF SECTION 08

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09 WORKER PROTECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Respiratory Protection is specified in Section 10.**

1.02 WORKER TRAINING:

- A. All workers are to be trained, certified and accredited as required by state and local codes or regulations.**
- B. All authorized workers shall provide proof of completion of coursework/training, including an EPA approved lead class, in handling contaminated materials and breathing contaminated dust and in proper work procedures and personal and area protective measures.**

1.03 MEDICAL EXAMINATIONS:

- A. Provide proof of passing medical examinations for all authorized workers who will enter the Work Area for any reason. At a minimum, examination shall meet OSHA requirements as set forth in 29 CFR 1926.1101. In addition, provide an evaluation of the individuals ability to work in environments capable of producing heat stress in the worker.**

PART 2 - EQUIPMENT

2.01 PROTECTIVE CLOTHING:

- A. Provide worker protection as required by the most stringent NYCDEP, NYSDOL, OSHA and/or EPA standards applicable to the work. Provide to all workers, foremen, supervisors and authorized visitors and inspectors protective disposable clothing consisting of full-body coveralls, head covers, gloves and 18-inch high boot type covers or reusable footwear.**
 - 1. Coveralls: provide disposable full-body coveralls and disposable head covers and require that they be worn by all workers in the work area. Provide a sufficient number for all required changes for all workers and visiting personnel in the work area.**
 - 2. Boots: provide work boots with non-skid soles, and where required by OSHA, foot protective, for all workers. Paint uppers of all boots yellow with waterproof enamel. Do not allow boots to be removed from the work area for any reason after being contaminated with dust or debris.**
 - 3. Hard Hats: provide hard hats as required by OSHA for all workers, and provide spares for inspectors, visitors, etc. Require hard hats to be worn at all times that work is in progress that may cause potential head injury. Provide hard hats of the type with plastic strap type suspension. Require hats to remain in the work area throughout the work. Thoroughly clean and decontaminate and bag hard hats prior to removing them from the work area at the end of the work.**

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- 4. Goggles: provide eye protection (goggles) as required by OSHA for all workers involved in any activity that may potentially cause eye injury. Require them to be worn at all times during these activities. Thoroughly clean and decontaminate goggles before removing them from the work area.
- 5. Gloves: provide work gloves to all workers, of the type dictated by the Work and OSHA Standards. Require that gloves be worn at all times in the Work area. Do not remove gloves from the Work area. Dispose of as construction waste at the end of the work.
- B. Reusable footwear, hard hats and eye protection devices shall be left in the contaminated "Equipment Room" until the end of the Abatement Work.
- C. Disposable protective clothing shall be discarded and disposed of as construction waste every time the wearer exits from the work space to the outside through the decontamination facility.

2.02 ADDITIONAL PROTECTIVE EQUIPMENT:

- A. Respirators, disposable coveralls, head covers and foot covers shall be provided by the Contractor for the Owner, Ambient Group, Inc. and any other authorized representative who may enter the work area.

PART 3 - EXECUTION**3.01 GENERAL:**

- A. Provide worker protection as required by the most stringent NYSDOL, OSHA and/or EPA standards applicable to the work.
- B. Each time the work area is entered, remove all street clothes in the Clean Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.
- C. Care must be taken to provide sufficient number of workers so that individuals are not subjected to undue heat stress. Contractor must provide sufficient work breaks for its crews.

3.02 DECONTAMINATION PROCEDURES:

- A. Before leaving the work area, with the respirator still on, worker is to vacuum off all clothing and exposed skin areas. It may be necessary for this to be accomplished by one worker assisting another. The first set of disposable clothing shall be deposited in properly labeled bags located in the work area. Workers then proceed into the Equipment Room of Decontamination Facility where additional personnel decontamination with HEPA vacuum and soft brush takes place and second set of overalls is disposed of.
- ~~B. Worker then enters shower room of the decontamination facility, showers, and disposes of respirator cartridges in properly labeled disposable bags.~~
- C. There shall be no eating, drinking, or smoking in the work area.

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- D. Everyone entering the work area must follow this procedure completely every time he/she enters and leaves the work area. Any individual that does not follow the procedure may be cited for an infraction. The individual will be given a verbal notice of the infraction, and the contractor and the contracting firm will be issued a written notice of the infraction. In the event that an individual is given two infraction notices, they will not be allowed back into the building.

END OF SECTION 09

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10 RESPIRATORY PROTECTION

PART 1 - GENERAL

1.01 STANDARDS:

- A. Except to the extent that more stringent requirements are written directly into the Design Documents, the following regulations and standards have the same force and effect (and are made a part of the Design Documents by reference) as if copied directly into the Design Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, the Contractor shall meet the more stringent requirement.
 - 1. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910.134.
 - 2. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2.
 - 3. NIOSH - National Institute for Occupational Safety and Health.
 - 4. Public Health Service, Department of Health and Human Services - 42 CFR Part 84.

1.02 DELIVERY:

- A. Deliver replacement parts, etc., not otherwise labeled by NIOSH, to the job site in manufacturer's containers.

1.03 GENERAL REQUIREMENTS:

- A. Respiratory Protection Program: Comply with ANSI Z88.2 "Respiratory Protection", and OSHA 29 CFR 1910 regulations.
- B. Respiratory protection shall be used at all times that there is a possibility of disturbance of contaminated materials whether intentional or accidental.
- C. A respirator shall be worn by everyone in a Work Area at all times, regardless of activity, during a period that starts with any operation that could cause airborne contaminated dust to be disturbed until the area has been cleared for re-occupancy.

PART 2 - PRODUCTS

2.01 AIR PURIFYING RESPIRATORS:

- A. Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z88.2. In addition, a chemical cartridge section

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may be added, if required, for solvents, biocides, etc., use as determined by Ambient Group, Inc. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

- B. **Negative Pressure - Half or Full Face Respirator:** Supply a sufficient quantity of respirator filters as described above so that workers can change filters during the workday. Respirators shall be wet-rinsed and filters discarded each time a worker leaves the Work Area. Store respirators and filters at the Work Site in the Clean Room and protect totally from exposure to contaminated dust prior to their use.
- C. **Powered Air Purifying - Half or Full Face Respirator (PAPR):** Supply a sufficient quantity of HEPA respirator filters so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Regardless of flow, filter cartridges shall be replaced after 40 hours of use. HEPA elements in filter cartridges shall be protected from wetting during showering. Entire exterior housing of respirator shall be washed each time a worker leaves the Work Area. Provide an extra battery pack for each respirator so that one can be changed while one is in use. Equip full-face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.

PART 3 - EXECUTION**3.01 GENERAL:**

- A. Respiratory protection shall be worn by all individuals who may be exposed to airborne contaminated dust during the project until all areas have successfully passed clearance air monitoring in accordance with these Regulations.
 - 1. All respiratory protection shall be NIOSH approved in accordance with the provisions of 42 CFR Part 84. All respiratory protection shall be provided by the Contractor, and used by workers in conjunction with the written respiratory protection program.
 - 2. Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any equipment that will alter the fit of the respirator in any way. Only waterproof identification markers shall be used.
 - 3. No facial hair which interferes with the face-to-mask seal (i.e., beards) shall be permitted to be worn when wearing respiratory protection that requires a mask-to-face seal. All workers must be clean shaven.
 - 4. Contact lenses shall not be worn in conjunction with respiratory protection on abatement projects.
 - 5. If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the Contractor at the Contractor's expense.

3.02 RESPIRATORY PROTECTION PROGRAM:

- A. Submit a written "Respiratory Protection Program" indicating type of respiratory protection proposed for each portion of the Work.

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3.03 FIT TESTING:

- A.** The Contractor shall ensure that the workers are initially qualitatively or quantitatively fit tested. Fit types of respirators to be actually worn by each individual. An individual shall use only those respirators for which he/she has been trained and fit tested.
- B.** Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit check each time a respirator is worn in accordance with the requirements set forth in 29 CFR 1910.134, Appendix B-1. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.
- C.** Records of respirator fit tests for all personnel shall be provided to the Owner and be available at the work site weekly.

3.04 TYPES OF RESPIRATORY PROTECTION REQUIRED:

- A.** The Contractor shall provide respirators selected by an Industrial Hygienist that meet the following requirements:
 - 1.** Half-mask and full-face air-purifying respirators with HEPA filters shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits specified by federal, state, and local regulations when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.
 - 2.** Full-face powered air-purifying respirators (PAPR) equipped with HEPA filters shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits specified by federal, state, and local regulations when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not more than 100 times, those limits. A supply of charged replacement batteries, HEPA filters and flow test meter shall be available in the clean room for use with powered air-purifying respirators. HEPA filters shall be changed daily or as flow testing indicates change is necessary.
 - 3.** Use of single use dust respirators is PROHIBITED for the above respiratory protection.
 - 4.** NO ONE is to be permitted into the work area without proper respiratory protection.

3.05 MAINTENANCE AND DECONTAMINATION PROCEDURES:

- A.** Respiratory protection maintenance and decontamination procedures shall meet the following requirements;
 - 1.** Respiratory protection equipment shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134, Appendix B-2; and
 - 2.** HEPA filters for negative pressure respirators shall be changed on a daily basis; and
 - 3.** Respiratory protection shall be the last piece of worker protection equipment to be removed. Workers must wear respirators in the shower when going through decontamination procedures as stated in Section 9, 3.02; and

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4. Air-purifying respirator face pieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturers recommendations; and
5. Respirators shall be stored in a dry place and in such a manner that the face piece and exhalation valves are not distorted; and
6. Unless recommended by the manufacturer, organic solvents shall not be used for washing of respirators.

3.06

AIR PURIFYING RESPIRATORS:

- A. Supply a sufficient quantity of HEPA respirator filters so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges must be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a worker leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

END OF SECTION 10

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11 DECONTAMINATION UNITS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A.** Refer to Section 06 Temporary Facilities for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical.

1.02 DESCRIPTION OF WORK:

- A.** Provide Personnel and Equipment Decontamination facilities. Require that the Personnel Decontamination Units be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Units.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A.** Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.
- B.** Framing Materials and Doors: As required to construct temporary decontamination facilities and critical barriers. Lumber shall be high grade, new, finished on side, and fire retardant.
- C.** Fire Retardant Clear Polyethylene sheeting that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Minimum thickness 6 mil; provide largest size possible to minimize seams.
- D.** Fire Retardant Black Plastic Sheeting, minimum thickness 6 mil: as required to obstruct view of abatement activities: provide largest size possible to minimize seams.
- E.** Tape: Provide tape which is of high quality with an adhesive which is formulated to aggressively stick to sheet polyethylene, as manufactured by Kendall Co., NASHUA Tape Products; or approved equal.
- F.** Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene, as manufactured by 3M; NASHUA Tape Products; or approved or equivalent.
- G.** Shower Pan: Provide one piece stainless steel shower pan with a minimum 6" depth.
- H.** Shower Head and Controls: Provide a factory-made showerhead producing a spray of water that can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside the shower.

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- I. Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter. Dispose of water in sanitary sewer system.
 - 1. Primary Filter - Passes particles 20 microns and smaller.
 - 2. Secondary Filter - Passes particles 5 microns and smaller.
- J. Shower Stall: For Wash Down Station, provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4' above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib.
- K. Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 time the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3" remains between the top of the liquid and the top of the sump pan.
- L. Contamination Control Flooring - as manufactured by Jomac, Inc. of Warrington, PA or approved equal.

PART 3 - EXECUTION

3.01 PERSONAL/WASTE DECONTAMINATION FACILITY:

- A. This decontamination facility shall be constructed of airtight wood framing. Frame construction shall be via 2" x 4" wood studs at 16" centers, with 1/2" plywood on each wall and ceiling. Ceiling joist shall be minimum 2" x 4" construction and shall be capable of supporting workers and equipment above. The Contractor shall provide an adequate decontamination unit consisting of serial arrangement or rooms or spaces adjoining the work area and as shown in details. Each space shall be clearly identified and separated from the others by plastic sheet doors, acceptable air locks, or other arrangements designed to minimize fiber or air transfer as people pass between areas. Airlocks shall be 3.0 feet in width.
- B. At each end of the facility, the Contractor shall construct plywood doors on hinges. The interior of each door shall be fitted with a clasp to prevent entry while work is being performed. The exterior door of the facility shall be fitted with a padlock to prevent unauthorized access into the work area. Construction warning signs shall be hung on both doors, and doors will be fitted with louvers to facilitate airflow.
- C. The location of the decontamination units shall be as per State and local regulations and, as approved by Ambient Group, Inc.

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D. The decontamination areas are described below:

1. Clean Room: In this room, persons remove and leave all street clothes and put on clean disposable coveralls. Approved respiratory protection equipment is also clean, stored, and picked up in this area. NO CONTAMINATED ITEMS ARE PERMITTED IN THIS ROOM. Contamination control flooring shall be placed on the floor of this room and immediately outside of this room. The clean room may not be used for waste storage but can be used for waste transfer to carts, which are stored outside the clean room in a designated holding area.
2. Shower Room: This is a separate room used for transit by cleanly dressed people entering the job site from the Clean Room and for showering by them after they have undressed in the Equipment Room. THIS IS A CONTAMINATED AREA. Hot and cold water controlled at the tap must be provided. The floor of the shower room shall be covered with a waterproof seamless 1/4" mat (neoprene, rubber, or equivalent) which extends a minimum of twelve inches up each wall. The Contractor shall provide a second rubber protection mat under the entire shower room.
3. Equipment Room: Work equipment, footwear, and all other contaminated work clothing are left here. This is a change and transit room for people. All areas between the Shower Room and the work area shall be considered part of the Equipment Room. Plastic floor and wall covering is required. THIS IS A CONTAMINATED AREA.

E. Respirator filters shall be removed when wet and treated as contaminated waste.

F. There shall be no smoking, eating, or drinking in any contaminated areas (Shower Room, Equipment Room, and Work Area). Respirators shall be worn in all contaminated areas.

G. Any worker footwear and warm outer clothing shall remain inside the contaminated area until the completion of the job, after which they shall be disposed of as contaminated waste.

H. It shall be the responsibility of the Contractor to provide a temporary connection for piping, hoses, etc., as required for hot and cold water. Provisions shall be made to adequately dispose of shower water.

I. Electricity is required for temporary lighting, heating, etc., of change room and shower areas. The Contractor shall provide all necessary temporary electrical fixtures. Temporary connections shall be made into existing facilities by the Contractor. In addition, a sufficient number of outlets shall be made available for the Owner's air monitoring personnel for the test equipment.

J. A designated holding area at the work site shall:

1. Be secured and maintained as a holding area contiguous with a waste decontamination enclosure system as specified herein, and
2. Be appropriately sized for waste generation, and
3. Conform to applicable Department of Sanitation regulations, and
4. Be permitted to be located in an area outside the enclosure system when circumstances necessitate this arrangement.

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3.03 WORK AREA ENTRANCE AND DECONTAMINATION SEQUENCE:

- A. All workers and other persons who will enter the work area shall remove street clothes, put on clean overalls, and respirator in clean rooms. Workers shall then pass through showers to the equipment room.
- B. Workers shall then proceed to work area.
- C. Before leaving the work area, the worker shall remove all gross contamination and debris from the coveralls. This is to be accomplished by one worker assisting another in brushing each other off or vacuuming with HEPA filter equipment vacuums approved for asbestos and/or contaminated material clean-up.
- D. The worker then proceeds to equipment room and removes all clothing except respiratory protection equipment. Contaminated extra clothing may be placed in a bag for disposal with other material.
- E. Any additional clothing such as non-disposable footwear, and equipment shall be left in the equipment room. The Contractor shall provide workers with additional warm garments as required by climatic conditions. These must be treated as contaminated clothing and left in the equipment room and disposed of at the end of the project.
- F. The worker then proceeds immediately into the shower room. Respiratory protection equipment shall be removed after worker has completely showered to prevent inhalation of fibers.
- G. After showering, the worker moves to the clean room and dresses in either new coveralls for another entry, or street clothes, if leaving.
- H. Workers shall not eat, drink, smoke, or chew gum or tobacco in the work area. To do any of the above, the worker shall have to follow the complete decontamination sequence.
- I. Worker footwear shall remain inside the work area (equipment room) until completion of the project and then be disposed of as contaminated waste.
- J. Everyone entering the work area must follow this procedure completely every time he/she enters and leaves the work area.
- K. The Contractor, in order to prevent contamination of the environment, shall be responsible for controlling access at the work site and shall maintain a daily log of personnel entering the work area. A list of names of workers shall be posted with their start and stop times for each day.
- L. The interior of the worker decontamination enclosure system shall be wet cleaned/HEPA vacuumed, as appropriate, after each shift change and meal break.

3.04 MAINTENANCE OF DECONTAMINATION ENCLOSURE SYSTEMS & BARRIERS:

- A. The following procedures shall be followed during the conduct of abatement activities.
- B. All polyethylene barriers inside the work place and partitions constructed to isolate the work area from occupied areas shall be inspected by the supervisor at least twice per shift.

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- C. Damage and defects in the decontamination enclosure system shall be repaired immediately upon discovery.
- D. At any time during the abatement activity, if visible emissions are observed, or elevated fiber or metals levels outside the work area are measured, or if damage occurs to barriers, abatement shall stop. The source(s) of contamination shall be located, the integrity of the barriers shall be restored and extended to include the contaminated area, and visible residue shall be cleaned up using appropriate HEPA-vacuuming and wet cleaning procedures.
- E. All inspections and observations shall be documented in the daily project log by the supervisor.

3.05 SIGNS:

- A. Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sized and styles of a visibility required by 29 CFR 1926:

- 1. Provide signs in English, Spanish and the predominant language of the abatement workers.
- 2. Legend:

**DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA**

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

- B. Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sized and styles of a visibility at least equal to the following:

- 1. Provide signs in English, Spanish and the predominant language of the abatement workers.
- 2.

LEGEND	NOTATION
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4" Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING	3/4"Block

END OF SECTION 11

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12 MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SUBMITTAL:

- A.** Submit manufacturer's technical product data, including product description and technical data for each product used on the project.

1.02 QUALITY ASSURANCE REFERENCES:

- A.** When the Contractor is given the option of selecting between two or more products for use on the project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.03 DELIVERY, STORAGE AND HANDLING:

- A.** Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 - 1.** Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2.** Store all materials on pallets, away from any damp and/or wet surface. Cover materials in order to prevent damage and/or contamination.
 - 3.** Promptly remove damaged materials and unsuitable items from the job site, and promptly replace with material meeting the specified requirements.
- B.** The Owner may reject as non-complying such material and products that do not bear identification satisfactory to the Owner as to the manufacturer, grade, quality, and other pertinent information.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION:

- A.** Scaffolding: All scaffolding shall be designed and constructed in accordance with OSHA (29 CFR 1926/1910), Municipal Building Code, and any other applicable federal, state, and local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions are applicable. All scaffolding and components shall be capable of supporting without failure of a minimum of 4 times the maximum intended load, plus an allowance for impact. All scaffolding and staging must be certified by a licensed professional engineer.
 - 1.** Equip rungs of all metal ladders, etc., with an abrasive, non-slip surface.
 - 2.** Provide non-skid surface on all scaffold surfaces subject to foot traffic. Scaffold ends and joints shall be sealed with tape to prevent penetration of contaminated dust.

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- B. **Transportation Equipment:** Transportation Equipment, as required, shall be suitable for loading temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Any temporary storage containers positioned outside the building for temporary storage shall be metal, closed, and locked.
- C. **Vacuum Equipment:** All vacuum equipment utilized in the Work Area shall utilize HEPA filtration systems. Vacuum equipment shall be as manufactured by Nilfisk of America of Malvern, PA. Recommended Model Nos. GS 81 or GS 83 or approved equal.
- D. **Vacuum Attachments:** Soft Brush Attachment, Drill Dust Control Kit.
- E. **Electric Sprayer:** An electric airless sprayer suitable for application of encapsulating material and shall be approved by and listed with Underwriters Laboratory.
- F. **Water Sprayer:** The water sprayer shall be an airless or other low-pressure sprayer for amended water application.
- G. **Portable Shower:** For personnel decontamination, Enviro-Clean by CRSI; Aero-Porta Shower; or approved equal.
- H. **Water Atomizer:** Powered air-misting device, equipped with a ground fault interrupter and equipped to operate continuously. Water atomizer device shall be the "Tri-Jet DS", No. 6228, as manufactured by Fog Master Corp. of Hialeah, FL, or EM 490 Portable Electrical/Airless Sprayer as manufactured by Graco, Inc., P O Box 1441, Minneapolis, MN 55440-1444 or approved equal.
- I. **Brushes:** All brushes shall have nylon bristles.
- J. **Hand Power Tools:** shall be equipped with HEPA-Filtered local exhaust ventilation, if used to drill, or otherwise disturb ACM.
- K. **Other Tools and Equipment:** The Contractor shall provide other suitable tools for the stripping, removal, encapsulation, and disposal activities including but not limited to: hand-held scrapers, sponges, rags, rounded-edge shovels, brooms, and carts.
- L. **Fire Extinguisher:** Provide type "A" fire extinguisher for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other areas, provide type "ABC" dry chemical extinguisher of NFPA recommended types for the exposure in each case. All fire extinguisher shall comply with the applicable recommendations of NFPA Standard 10, "Standard for Portable Extinguisher". Provide a minimum of four (4) fire extinguisher in each work area, one (1) in each equipment room of the decontamination unit and one (1) outside each work area in the clean room or directly outside the same. Locate fire extinguishers where they are most effective for their intended purpose, but do not exceed seventy-five feet (75') between fire extinguishers within the work area.
- M. **First Aid Kits:** The Contractor shall maintain adequately stocked first aid kits in the clean room and the work area. The first aid kit shall be in compliance with ANSI Z308.1.

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PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS:

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration.

END OF SECTION 12

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REMOVAL OF DUST, DEBRIS, AND CONTAMINATED MATERIALS****13 PROJECT DECONTAMINATION****PART 1 - GENERAL****1.01 RELATED DOCUMENTS:**

- A. Removal of Gross Debris is integral to the performance of abatement work and as such is specified in Section 15 Removal of Contaminated Dust, Debris and Materials.
- B. Air testing and other requirements that must be met before release of Contractor and re-occupancy of the Work Area are specified in Section 14, Work Area Clearance, and Section 05, Air and Wipe Sampling.

PART 2 – PRODUCTS (Not Applicable)**PART 3 - EXECUTION****3.01 FIRST CLEANING:**

- A. After completion of the removal phase, all surfaces from which contaminated materials have been removed shall be scrubbed using nylon or bristle brushes and wet sponges, or cleaned by an equivalent method to remove all visible dust. During this work, the surfaces being cleaned shall be kept damp using an amended water solution. All disposable equipment shall be packaged for disposal.
- B. All equipment, machinery, scaffolding, tools, etc. within the isolated Work Area shall be wet-wiped and HEPA vacuumed, moved to the equipment room, and properly removed from the Work Area.
- C. Prior to the application of any sealant or encapsulating material, and after all visible material has been removed from the substrate, Ambient Group will perform a pre-sealant inspection. The Contractor shall notify Ambient Group, in writing, 24 hours prior to the time the work will be ready for inspection.
- D. Following acceptance of first cleaning by Ambient Group, apply a thin coat of pigmented encapsulant to all surfaces in work area where asbestos-containing materials have been removed. Allow a minimum of 4 hours, or as further required by the encapsulant manufacturer, for sealants to dry.
- E. Remove the cleaned and encapsulated layer of plastic surface barriers and dispose of as asbestos-containing waste materials.
- F. Wait 12 hours to allow negative air machines to clean air of any airborne asbestos fibers.

3.02 SECOND CLEANING:

- A. Perform second wet cleaning and HEPA-vacuuming of all surfaces in work area.

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- B. Remove the second layer of plastic surface barriers, leaving only the critical barriers in place, and dispose of as asbestos contaminated waste material.

- C. Wait 4 hours or more to allow HEPA-filtered exhaust units to clean air of airborne asbestos fibers.

3.03 FINAL CLEANING:

- A. Carry out a final cleaning of all surfaces in the Work Area in the same manner as the previous cleaning. This cleaning is now being applied to existing room surfaces and critical barriers.

- B. The Contractor shall request that a final clean up inspection be performed to insure that all visible dust has been removed, that the area is free of contaminated dust, waste bags, and/or debris. Ambient Group and the Contractor shall perform a complete visual inspection of the entire work area.

- C. When the area is visually determined to be clean, and following a 1 hour waiting period, clearance sampling shall be performed.

3.04 FINAL AIR AND WIPE SAMPLING:

- A. After the Work Area is found to be visually clean, air and wipe sampling will be conducted in accordance with Section 05 - Air and Wipe Sampling.

- B. In the event that release criteria is not met, all costs associated with re-testing and re-cleaning shall be borne by the Contractor.

- C. All clearance sampling and analysis shall be performed by Ambient Group.

3.05 REMOVAL OF WORK AREA ISOLATION:

- A. Following clearance, dismantling of the decontamination unit and/or critical barriers is to be conducted in a controlled fashion. The following controls are to be utilized:

1. Dismantling is to be coordinated with the Owner.
2. The Contractor is to conduct this work with personnel protective equipment.
3. The Contractor is to utilize HEPA-vacuuming/wet-wiping techniques to clean up any miscellaneous debris encountered or dislodged during this activity.
4. The Owner's testing laboratory may conduct air sampling to monitor this work.

3.06 SUBSTANTIAL COMPLETION OF ABATEMENT WORK:

- A. Abatement Work is Substantially Complete upon meeting the requirements of this section, including submission of:

1. Certificate of Visual Inspection.
2. Air and Wipe clearance sampling results

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3. Receipts documenting proper disposal of the waste.
4. Punch list detailing repairs to be made and incomplete items.

END OF SECTION 13

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14 WORK AREA CLEARANCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Visual inspection required as a prerequisite of air and wipe testing, is set forth in Section 13 Project Decontamination.
- B. Air monitoring performed by the Owner during abatement work, and air and surface clearance criteria are described in Section 05 Air and Wipe Sampling.

1.02 CONTRACTOR RELEASE CRITERIA:

- A. The Work Area is cleared when the Work Area is visually clean and all contaminants have been reduced to the levels specified in Section 05.
- B. The Contractor is responsible for maintaining isolation of the work area until all abatement of dust and debris is complete, and/or the risk of cross contamination in the building has been eliminated.
- C. Following work area clearance, the work areas must be positively pressurized to eliminate the risk of cross contamination from other floors which have either not yet been abated or are undergoing cleaning.

1.03 VISUAL INSPECTION:

- A. Work of this Section will not begin until the visual inspection described in Section 13 Project Decontamination is complete and has been certified by the Project Administrator.

1.04 AIR AND WIPE SAMPLING:

- A. Work of this Section is described in Section 05.

1.05 LABORATORY TESTING:

- A. Clearance samples shall be promptly submitted (either hand delivered or via overnight delivery) to an independent AIHA and/or ELAP Certified Laboratory for analysis. Verbal results shall be issued as soon as possible in order to minimize any possible delay in the progress of the Work. Verbal results shall be followed with a certificate of analysis.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 14

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15 REMOVAL OF CONTAMINATED DUST, DEBRIS AND MATERIALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Installation of Critical and Primary Barriers, and Work Area Isolation Procedures are set forth in Section 07 Temporary Enclosures and Work Area Preparation.
- B. Project Decontamination procedures are specified in Section 13 Project Decontamination.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.
- B. Plastic Bags: Sealable, disposable bags, minimum 6 mil. thick.
- C. Waste Container Bag Liners and Flexible-Trailer Trays: One piece leak resistant flexible tray with absorbent pad, as manufactured by Packaging Research and Design Corporation, Madison, WS. 39130 or equal.
- D. Tape: Provide tape which is of high quality with an adhesive which is formulated to aggressively stick to sheet polyethylene, as manufactured by Kendall Co., NASHUA Tape Products; or approved equal.
- E. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene, as manufactured by 3M; NASHUA Tape Products; or approved or equivalent.

PART 3 - EXECUTION

3.01 DUST AND DEBRIS REMOVAL METHODS:

- A. Following isolation of the work area, protection and authorization to proceed, the removal of dust, debris, and contaminated materials shall proceed in the following sequence:
 - 1. Remove and clean any non-porous furnishings that are scheduled to be saved (e.g., kitchen cabinets and countertops, bookshelves, etc.);
 - 2. Remove and dispose of all remaining furnishings and appliances;
 - 3. Remove perimeter gypsum board walls, and any insulation behind the walls;

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4. Remove interior gypsum board walls and ceilings, and any insulation behind the walls. Contractor shall thoroughly HEPA vacuum the back side of any walls that may be scheduled to remain (i.e., bathroom walls that are covered with tiles);
 5. Remove HVAC units and all associated duct work;
 6. Remove pipe insulation and spray-on fireproofing;
 7. Remove any BX electrical cables and any remaining porous materials;
 8. Gross clean the entire work area via HEPA vacuuming and wet wiping techniques;
 9. Remove all polyethylene sheeting on the floors;
 10. Remove all exposed hardwood flooring and gross clean the sub-flooring via HEPA vacuuming and wet wiping techniques;
 11. Remove any carpeting and clean the underlying hardwood flooring via HEPA vacuuming and wet wiping techniques;
 12. Following removal of contaminated materials and wastes, clean the entire area using HEPA vacuums and damp wiping techniques.
- B.** All contaminated waste shall be properly packaged in two 6-mil polyethylene waste bags with a gooseneck seal. This shall include all items reasonably able to be bagged such as papers, gross debris, and other porous items. Packaged waste and large equipment will pass through the waste removal chamber. During waste removal the following procedures shall be employed:
1. Workers shall clean the outside of the bags and equipment in the bagged waste washroom with a HEPA vacuum and wet-wiping techniques prior to being passed into a "clean" area.
 2. Workers shall then pass the waste bags and equipment out through the airlock to non-Work Area Workers.
 3. The location of the enclosed dumpsters for the removal of the wastes from the site shall be in an area approved by the Owner.
- C.** After all visible material has been removed from the work area, Ambient Group, Inc. will perform a clearance inspection.
- D.** All accessory equipment shall be moved from the Work Area to the Equipment Room and decontaminated for removal.
- E.** Any free water in the contaminated areas shall be retrieved and disposed via the filtered shower drain.
- F.** The final clean up of a work area may commence at this time.

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REMOVAL OF DUST, DEBRIS, AND CONTAMINATED MATERIALS**3.02 REMOVAL AND STORAGE OF CONTAMINATED WASTE:**

- A. All routes through the building, elevators, stairways, etc. to be used for the transportation of contaminated wastes to the storage area shall be at the direction of the Owner. All waste shall be transported through the building in hard watertight containers that shall be lined with one (1) layer of 6 mil. polyethylene sheeting.
- B. All contaminated waste shall be disposed of at the end of each work shift or at a time coordinated with the Owner. At no time shall random removal of contaminated waste from the work site be allowed.
- C. No materials shall be thrown from windows or doors of buildings.
- D. The debris shall be removed from the site daily. Premises shall be left neat and clean after each work shift so that business may proceed the next regular workday without interruption.
- E. All waste shall be removed through a decontamination chamber.
- F. The exterior of all waste containers shall be cleaned with a HEPA vacuum and wet-wiping techniques prior to leaving the decontamination chamber.
- G. All contaminated materials shall be stored in a securely locked dumpster or storage area. The dumpster or storage area must be approved by Ambient Group, Inc. prior to its use.
 - 1. The container used for the storage of bagged contaminated waste shall be an enclosed dumpster. The dumpster shall have a solid metal roof and a solid metal door with a padlock. No un-bagged contaminated waste shall be stored in these dumpsters. The Contractor shall ensure that all bags and drums placed in the dumpster are undamaged.
 - 2. The Contractor shall provide a secured storage area for the storage of packaged contaminated waste prior to the transport to the waste site. The storage area shall be equipped with lockable doors.
 - 3. All non-porous waste items (as described in Section 01) shall be disposed of accordingly.
 - 4. No compacting of bagged waste is allowed.
- H. All porous items shall be handled and disposed of as asbestos contaminated waste.
- I. All transport and disposal including but not limited to bills of lading shall be provided to the Owner at the end of each workday. Hauler's NYS DEC and NYC DEP registration copies and landfill permit copies must be presented to Owner prior to proceeding with transport and disposal.

END OF SECTION 15