ASBESTOS ABATEMENT TECHNICAL SPECIFICATIONS

FOR:

130 Cedar Street
New York, NY

PREPARED FOR:

Master Works Development Corp.
56 West 45th Street, 4th Floor
New York, NY 10036

BY:

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JLC

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RECORD OF CERTIFICATION

This Asbestos Abatement Technical Specifications was prepared by JLC Environmental Consultants, Inc., under contract with Master Works Development Corp., for the abatement of Asbestos Containing Materials (ACM) from 130 Cedar Street. These Specifications were completed utilizing applicable regulations, standards and generally accepted environmental and safety practices including Federal OSHA (29 CFR 1910.1001), EPA NESHAPS (40 CFR Part 61), and TSCA Title II AHERA/ASHARA (40 CFR Part 763) Asbestos Regulations; the New York State Department of Labor Industrial Code Rule 56 and the New York City Department of Environmental Protection Title 15 Asbestos Regulations and are consistent with accepted principles and practice established and prescribed with the EPA Approved AHERA Project Designer's Certification.

This Specification, and the supporting data it contains, represents the result of JLC's efforts on behalf of your firm and are factually representative of the conditions and circumstances we observed on the dates of our inspection. If your firm implements this Specification, it should not be construed as an assurance or implied warranty for the continuing safety, performance, or cost-effectiveness of any equipment, product, system, facility, procedure, or policy discussed or recommended herein.

This Specification may contain sensitive information about our Client, their staff, equipment, operations, or policies. It may also contain confidential or proprietary information about specific equipment or products, which have been provided to JLC by the manufacturers or other sources. Therefore, we consider this report confidential and unauthorized use of this document by bidders, or transfer of information/or specification contained herein to others by bidders shall be considered a violation. This Specification should not be transmitted to third parties without the written permission of the Master Works Development Corp., and/or JLC Environmental Consultants, Inc.

SECTION ONE: SCOPE OF WORK

1.0 Description of the Work

1.1 The work specified herein shall be the removal, as indicated, of ACM from the locations of the subject property by competent persons who are trained, knowledgeable, qualified and licensed in the techniques of abatement, handling and disposal of asbestos-containing and asbestos-contaminated materials and the subsequent cleaning of contaminated areas.

1.2 The asbestos abatement contractor (the Contractor) shall supply all labor, material services, insurance, permits and equipment necessary to carry out the work.

2.0 Work Summary

2.1 Bids shall be submitted for the implementation of the scope of work for asbestos removal at 130 Cedar Street, as outlined in Section 10 “Asbestos Quantity Schedules”.

3.0 Sequence of Work

3.1 The Contractor shall adhere to the following sequence of tasks:

a. Construction of decontamination systems as required

b. Sealing of all vents, drains, fan units, motors, belt housings, light switch fixtures, etc. with critical barriers composed of two (2) layers of 6-mil fire retardant polyethylene sheeting

c. Work area preparation: All surfaces in the work area shall be covered with two (2) layers of 6-mil fire retardant polyethylene sheeting to create an airtight enclosure. Negative air filtration systems shall be installed with sufficient negative pressure to maintain a minimum of four (4) air changes per hour.

d. Work area preparation for asbestos abatement as required.

e. Removal of all ACM from proposed work areas and Occupational Health and Safety Administration (OSHA) personal monitoring during this removal.

f. Clean up, final clean-up and load out of all ACM.

g. Transportation of ACM to an approved landfill.

h. Final clean up and removal of equipment and materials after clearance has been attained.

4.0 Special Conditions

4.1 The Contractor shall provide labor, materials and equipment to complete the work as by the Contract Documents, including but not limited to the following:

a. The filing of all required notifications and variances, including the payment of all fees charged by all regulatory agencies.
b. Work area preparation.
c. General protection.
d. Isolation barrier construction.
e. Removal of all ACM, asbestos contaminated building components and decontamination of all surfaces.
f. Installation of personnel and waste decontamination facilities.
g. Transportation and disposal of asbestos waste.
i. Re-establishment of all building systems disrupted by the work of this contract.
j. Repair or replacement, to the Owner's satisfaction, of any existing finishes, construction or other building components damaged during the work.
k. Conduct daily inspections of all adjacent spaces and clean up as required.

4.2 If the Contractor has any questions as to possible errors or omissions in the Specifications, he shall immediately bring the discrepancy or other question to JLC's attention in writing and obtain a written decision as to the methods and materials to be used, before the submission of his bid. Failure to obtain clarification in writing shall not relieve the Contractor of performing the normal good practice of the industry.

4.3 All waste generated by the Contractor shall be disposed of as contaminated waste to a licensed landfill.

4.4 The Contractor shall provide all required plumbing and electrical work, including temporary connections. The Abatement Contractor shall provide a temporary electric panel for his equipment and, where required, shall provide temporary lighting in accordance with all applicable codes and standards.

4.5 Bidders are required to visit the premises prior to the time of submitting proposals for the work described herein, and thoroughly inspect the conditions under which the contract is to be executed. The Contractor is responsible for field verification of all locations and quantities and determining all varying field conditions prior to the submission of their bid. Bids should include the removal of all ACM identified in the specifications and asbestos abatement drawings. Quantities provided herein are estimates and are meant to include all ACM.

4.6 The Building Owner shall provide water and electric power at each floor and at the roof. All temporary water connections shall be turned off and all water hoses disconnected at the end of the work shift. All wastewater from the abatement activities shall be pre-filtered, stored in barrels and re-used as amended water or disposed of as contaminated waste.

4.7 The Contractor agrees to defend and hold Masterworks Development Corp. and JLC Environmental Consultants, Inc. harmless from any and all fines, levies or penalties. This includes the cost to defend penalties issued by any jurisdictional authorities as a result of actions or work procedures used by the Contractor or his sub-Contractors or any persons or organizations assisting or employed directly or indirectly by the Contractor.

4.8 No consideration or allowance will be granted for any misunderstanding or discrepancies of work practices or materials used without written permission from the Owner.

SECTION TWO: GENERAL CONDITIONS

1.0 Requirements

1.1 All work under this contract shall be done in strict accordance with applicable Federal, State and Local regulations, standards and codes governing asbestos abatement.

1.2 The most recent edition of applicable regulations, standards, documents or codes shall be in effect. Where conflict among the requirements or with these specifications exists the most stringent requirements shall be utilized.

1.3 Copies of all standards, regulations, codes and other applicable documents, including this Specification shall be made available at all times by the Contractor at the work site in the clean change area of the worker decontamination system.

1.4 The Contractor shall be required to complete all work within a time frame stipulated by the Owner.

1.5 Indoor abatement for all phases of work should occur during regular hours from 8:00 AM to 5:00 PM. Outdoor abatement for all phases of work may occur during daytime hours. Any other performance of work outside of these hours, including weekends and legal and union holidays will be permitted only upon receipt of permission, in writing, from the Owner.

1.6 The Contractor shall, at the time of delivery, unconditionally own all materials delivered to the job site. The Contractor may not assign any money due, or to become due under this contract, without having received written consent from the Owner(s).

1.7 The Contractor may not assign or sub-contract any of the work to be performed under this contract without having first received written permission from the Owner(s) for all such assignment and/or sub-contracting.

1.8 The Contractor shall guarantee all workmanship and materials free- from-fault or defect for a period of one year from job closeout.

1.9 The Contractor will be expected to execute an AIA-A101 Construction Contract and comply with the applicable standard AIA General and Special Provisions in addition to these Specifications.

1.10 Storage areas will be assigned to the Contractor for equipment, tools and materials. No space will be allocated to the Contractor for parking of automobiles or trucks.

1.11 The Contractor may interrupt no building services without prior written permission from Owner(s).

1.12 Applicable Federal, State and Local rules and regulations governing abatement workers training requirements, and the disposal of asbestos materials are **not** completely documented in this Specification. The Contractor and his personnel are required to have read and familiarized themselves with such rules and regulations. Copies of these regulatory documents must be kept on the job site until completion of the work.

2.0 Definitions

2.1 Abatement: Procedures to control fiber release from ACM including removal, encapsulation, enclosure and repair.

2.2 Abatement Activities: all activities from the initiation of work area preparation through successful clearance air monitoring to be performed at the conclusion of an asbestos project or minor project.

2.3 Aggressive Sampling: A sampling method in which the air sampling technician agitates and makes airborne any settled dust and residual asbestos fibers through the use of mechanical equipment to stir up settled dust during the sampling period, thus simulating activity in that area of the building.

2.4 AIHA: The American Industrial Hygiene Association, 475 Wolf Ledges Parkway, Akron, Ohio 44311

2.5 Air Lock: A system for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two (2) curtained doorways separated by a distance of at least three (3) feet such that one (1) passes through one doorway into the air lock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

2.6 Air Sampling: The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional method developed by the United States Environmental Protection Agency (USEPA), which are utilized for lower detectability and specific fiber identification.

2.7 Ambient Air Monitoring: Measurement or determination of airborne asbestos fiber concentrations outside of, but in the general vicinity of the work site.

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

2.9 ANSI: The American National Standards Institute, 1430 Broadway, New York, New York 10018

2.10 Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at a stationary location.

2.11 Asbestos: Any hydrated mineral silicate separable into commercially usable fiber, including but not limited to Chrysotile (serpentine), Amosite (cummingtonite-grunerite), Crocidolite (riebeckite), Tremolite, Anthrophyllite, and Actinolite.

2.12 Asbestos Contaminated Objects: Any objects that have been contaminated by asbestos fibers.

2.13 Asbestos Containing Material (ACM): Pure asbestos or any material containing more than or equal to one (1) percent asbestos by weight.

2.14 Asbestos Containing Waste Material: ACM or asbestos contaminated objects requiring disposal.

2.15 Asbestos Project: Any form of work performed in connection with the alteration, renovation, modification or demolition of a building or structure which will create friable ACM.

2.16 Asbestos Project Air Sampling Technician: Any person who performs air sampling at an asbestos abatement project.

2.17 Asbestos Removal Plan: A plan which will be undertaken so as to prevent asbestos from becoming airborne in the course of the alteration, renovation, modification of demolition of any building or structure.

2.18 Approved Safety and Health Program: A program that provides training in the handling and use of ACM, details the safety and health risks inherent in such handling and use, discusses methods for minimizing the exposure of workers and the public to asbestos fibers, and includes instruction in applicable Federal, State and Local Laws and Regulations pertaining to asbestos related work.

2.19 ASTM: The American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania. 19103

2.20 Authorized Visitor: The client, his representative and any representative of a regulatory or other agency having jurisdiction over the project.

2.21 Background Level Monitoring: A method used to determine airborne asbestos fiber concentrations inside and outside the work areas of a building prior to the start of abatement activities.

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

2.23 Clearance Air Monitoring: The employment of aggressive sampling techniques using the volume of air collected to determine the airborne concentrations of residual fibers. It is to be performed as the final abatement activity.

2.24 Contractor: The State, any political sub-division of the State, a public authority or any other governmental agency or instrumentality thereof, self employed person, company, unincorporated association, firm, partnership or corporation and any owner or operator thereof, which engages in an asbestos abatement project.

2.25 Curtained Doorway: A device that consists of at least three overlapping sheets of plastic over an existing or temporarily framed doorway. One (1) 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 weight attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

2.26 Decontamination Enclosure System (DES): A series of connected rooms, separated from the work area and from each other by air locks and used for the decontamination of workers, materials and equipment.

2.27 Demolition: The dismantling or razing of a building, including all operations incidental thereto (except for asbestos abatement activities for which a demolition permit from the New York City Building Departments is required).

2.28 Disturb: To alter or change, such as but not limited to the removal, encapsulation, enclosure or repair of ACM.

2.29 Encapsulant (sealant) or Encapsulating Agent: A liquid material which can be applied to an ACM and which temporarily controls the possible release of asbestos fibers from the material by creating a membrane over the surface (bridging encapsulation) or by penetrating into the material and binding its components together (penetrating encapsulant).

2.30 Encapsulation: The coating or spraying of asbestos materials with a sealant/encapsulating agent.

2.31 Enclosure: The construction of air tight walls and a ceiling between the asbestos material and the facility environment, or around surfaces coated with asbestos materials, or any appropriate and approved procedure that prevents the release of asbestos materials.

2.32 Equipment Decontamination Enclosure: That portion of a DES designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.

2.33 Equipment Room: A contaminated area or room that is part of the worker DES with provisions for the storage of contamination clothing and equipment.

2.34 Fiber: An acicular single crystal or a similarly elongated polycrystalline aggregate that displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation and others, and that has attained its shape primarily through growth rather than cleavage.

2.35 Fixed Object: A unit of equipment or furniture in the work area that cannot be removed.

2.36 Friable Asbestos Material: Any material applied onto ceilings, walls, structural members, piping, duct work or any other part of the building structure that when dry may be crumbled, pulverized or reduced to powder by hand or other mechanical pressure.

2.37 Glove bag Technique: A method for removing friable ACM from heating, ventilation, and air conditioning (HVAC) ducts, short piping runs, valves joints, elbows and other non-planar surfaces in a non-contained work area. The glovebag is constructed of 10-mil transparent plastic, two inward-projecting water-wand sleeves, an internal tool pouch and an attached, labeled receptacle for asbestos waste.

2.38 Glovebag: Constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process.

2.39 HEPA Filter: A high efficiency particulate air filter capable of trapping and retaining 99.97 percent of particles (asbestos fibers) greater than 0.3 micrometers mass median aerodynamic equivalent diameter.

2.40 HEPA Filter Equipped Unit: A portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and the inside of the work area.

2.41 HEPA Vacuum Equipment: Vacuuming equipment with a high efficiency particulate air filter system.

2.42 Holding Area: A chamber in the equipment decontamination enclosure, located between the washroom and an uncontaminated area.

2.43 Homogenous Work Area: A site within the abatement work area that contains one type of ACM and where one type of abatement is used.

2.44 Incidental Exposure: Any occupational exposure to asbestos fibers caused by disturbing ACM during the performance of one's job other than during asbestos abatement activities.

2.45 Industrial Hygienist: The professional contracted or employed by the Building Owner(s) and or Tenant to supervise and/or conduct air monitoring and analysis, perform inspections and act as the Owner/Tenant Representative.

2.46 Isolation Barrier: Shall mean the construction of partitions, the placement of solid materials and the plasticizing of apertures to seal off the work place from surrounding areas to contain asbestos fibers in the work area.

2.47 Log: An official record of all activities that occurred during the project. It shall identify the Building Owner(s), Agent, Contractor, Workers and other pertinent information.

2.48 Movable Object: A unit of equipment or furniture that can be removed from the work area.

2.49 NESHAPS: The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

2.50 NIOSH: The National Institute for Occupational Safety and Health CDC-NIOSH, Building J - N.E., Room 3007, Atlanta, Georgia 30333

2.51 Occupied Area: Area of the work site where abatement is not taking place and where personnel or occupants function normally and abatement project workers are not using personnel protective equipment.

2.52 OSHA: The Occupational Safety and Health Administration

2.53 Phase Contrast Microscopy (PCM): The measurement protocol for the assessment of the fiber content of air. (NIOSH Method 7400)

2.54 Personal Air Monitoring: A method used to determine employee's exposure to airborne fibers. Samples are collected outside the respirator in the workers' breathing zone as OSHA asbestos standards (29 CFR 1926.58).

2.55 Personal Protective Equipment: Appropriate clothing, headgear, eye protection, footwear and MSHA/NIOSH approved respiratory protection.

2.56 Plasticize: To cover floors and walls with 6-mil fire retardant polyethylene or by using fire retardant spray plastics.

2.57 Prior Experience: Experience required of the Contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in the areas related to material project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

2.58 Removal: The stripping of any ACM from surfaces or asbestos components of a facility.

2.59 Renovation: Renovation shall mean an addition, alteration, change or modification of the service equipment of a building that is not classified as an

ordinary repair as defined in 27-125 of the Administrative Code of the City of New York.

2.60 Respiratory Protection Standard: Respiratory protection provided to workers in accordance with Personnel Protection Equipment Requirements (OSHA 20 CFR 1926.58)

2.61 Shift: A workers', or simultaneous group of workers', complete daily term of work.

2.62 Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at a tap and arranged for complete showering during decontamination.

2.63 Staging Area: The area near the waste transfer air lock where containerized asbestos waste has been placed prior to removal from the work area.

2.64 Strip: To remove friable asbestos from any part of the facility.

2.65 Structural Member: Any load-supporting member of a facility, such as beams and load-supporting walls, or any non-load-supporting member, such as ceiling and non-load-supporting walls.

2.66 Surfactant: A chemical wetting agent added to water to improve penetration.

2.67 Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments.

2.68 Washrooms: A room between the work area and the holding area in the equipment DES where equipment and waste containers are wet cleaned and/or HEPA vacuumed prior to disposal.

2.69 Waste Decontamination Enclosure System: The DES designated for the controlled transfer of materials and equipment, consisting of a washroom and a holding area.

2.70 Wet Cleaning: The removal of asbestos fibers from building surfaces and objects by using cloths, mops or other cleaning tools that have been dampened with water.

2.71 Work Area: Designated rooms, spaces or areas of the project where asbestos abatement activities take place.

2.72 Work Site: Premises where asbestos abatement activity is taking place and that may be comprised of one or more work areas.

2.73 Worker DES: That portion of a DES designated for controlled passage of workers and other personnel and authorized visitors, consisting of a clean room, shower room and equipment room separated from each other and from the work area by curtained doorways and air locks.

3.0 Applicable Standards and Guidelines

3.1 All work under this contract shall be done in strict accordance with all applicable Federal, State and Local regulations, standards and codes governing asbestos abatement.

3.2 The Contractor shall comply with all applicable Federal, State and Local regulations and guidelines of asbestos removal, including, but are not limited to, the following:

a) Code of Federal Regulations (CFR) Publications:

1. 29 CFR 1910.1001 Asbestos, Tremolite, Anthophyllite, Actinolite
2. 29 CFR 1910.134 Respiratory Protection
3. 29 CFR 1926 All Sections
4. 29 CFR 1910 All Sections

b) American National Standards Institute (ANSI) Publications:

1. Z9.2-79 Fundamental Governing the Design and Operation of Local Exhaust Systems
2. Z88.2-80 Practices For Respiratory Protection

c) Title 15; Chapter 1 of the Rules of the City of New York

d) Title 16; Chapter 8 of the Rules of the City of New York

e) Local Law No. 21 of the City of New York

f) Industrial Code Rule No. 56 (ICR-56) of the State of New York

g) United States Environmental Protection Agency (EPA) - National Emissions Standards for Hazardous Air Pollutants (NESHAP).

4.0 Work Procedures

4.1 General Abatement Techniques

a) ACM must be wetted down thoroughly and as often as necessary to prevent the emission of fibers. The ACM removal shall begin within areas closest to the decon unit and proceed towards the HEPA filtration units.

b) Wet ACM shall be disposed of in doubled 6-mil bags marked with warning labels. Soaked fallen ACM shall be collected and bagged while wet. Contaminated materials containing sharp edges shall be cut to size while still wet, placed in small cardboard boxes and double bagged or placed in a leak-tight container. Waste bags and containers shall be properly labeled.

c) ACM shall not be dropped or thrown from heights exceeding fifteen (15) feet above the floor. At heights above 15 feet, ACM shall be dropped into incline chutes, dropped onto scaffolding, or containerized at that height for later disposal. At heights above forty (40) feet, a dust tight chute shall be employed.

d) Visible remaining ACM shall be removed with nylon brushes or an equivalent method. During this phase surfaces being cleaned are to be kept wet. All disposable materials and equipment shall be packaged for disposal.

e) Other equipment shall be moved to the equipment room in 6-mil plastic bags and decontaminated for removal. All free water in contaminated areas shall be collected and added to ACM waste and/or placed in plastic lined, leak proof containers, solidified or filtered appropriately in accordance with all applicable regulations.

4.2 Materials to Be Utilized:

a) 6-mil, fire retardant polyethylene sheeting and 6-mil bags shall be utilized to begin the initial work site preparation such as the erection of critical barriers, pre-cleaning of debris, etc.

b) High quality duct tape, spray-on adhesives, glues and other barrier securing materials shall be available on-site to facilitate work area preparation

c) A proper surfactant or removal encapsulant shall be employed as a wetting agent

d) Tools such as wire-cutters, utility knives, scrub brushes, scrapers, etc., shall be used to aid in abatement

e) Mops, rags and HEPA vacuums shall also be employed during any abatement.

f) Asbestos Hazard Tape shall be used to cordon off the restricted areas at the base of any scaffolding utilized for abatement.

4.3 Isolation of Work Areas:

a) Critical barriers shall be placed on all windows and openings in the work area. These shall be sealed and remain in place until final air clearance testing has been completed.

b) The work area shall be pre-cleaned with HEPA vacuums, as well as wet wiped where necessary, as directed by the Industrial Hygienist or foreman assigned to the project.

c) Two (2) layers of 6-mil, fire retardant polyethylene sheeting shall be placed on floors and walls and ceilings in order to provide protective barriers and to achieve negative air pressure inside the work area.

d) Negative air filtration equipment of sufficient quantity and capacity shall be determined on a per job basis. A minimum of 0.02 inches water column shall be achieved prior to the start of any abatement work. The capacity shall be enough to cause a complete air change or total air filtration within the work area four (4) times per hour.

4.4 Decontamination Chamber Construction/Maintenance:

a) In work areas where it is required, a three (3) stage decontamination (decon) chamber shall be constructed. This shall take place prior to any work being started in any area.

b) The chamber shall be composed of a series of three (3) rooms/spaces set up in a consecutive arrangement from the work area to the outside atmosphere. If required, a decontamination trailer shall be provided to the workers and placed in an isolated position in the uncontaminated environment.

c) The first, innermost room of the decon chamber shall be designated as the dirty or contamination room. It will be located at the closest proximity to the enclosed work area and separated by an airlock. This in turn shall be attached to a shower room by an air lock to prevent fiber release. This shower room, which the workers shall use to decontaminate themselves of all remaining asbestos fibers when exiting work area, shall be attached to the clean room/outer room. The clean room outer room shall be used as the entrance to the actual decon chamber. It is here where street clothes and uncontaminated personnel protective equipment shall be accessed.

d) Air locks used to separate the rooms shall be composed of fire-retardant, plastic doors and weighted to prevent contaminated air from escaping into the environment.

e) A minimum of two (2) layers of fire retardant, polyethylene shall be used for construction of a decontamination unit inside the work area, and a two (2) layer ceiling shall be used to protect the integrity of the decon unit.

f) The decon chamber doors shall be of sufficient height and width to enable replacement of equipment that may fail during work procedures. The required minimum width of such doors must be at least four (4) feet wide.

g) A daily log of personnel entering the work area shall be maintained in order to control the access to the decon unit and work area.

h) Visitors and inspectors shall be provided with information and personnel protective equipment upon request and with proper identification.

i) A decon unit shall be constructed in accordance with the applicable regulations including SubChapter G, Part 1 & 2 of NYCDEP Title 15 for pre demolition abatement activities and any applicable variances from the NYC-DEP Asbestos Regulations.

j) Two (2) layers of 6-mil, fire-retardant polyethylene sheeting shall be placed on walls, floors and ceilings.

k) Sufficient air filtration devices (AFD) units shall be used to insure four (4) air changes in work area per hour.

l) Material to be removed shall be sufficiently wetted with amended water prior to removal.

m) Workers will wear respiratory protection as required by OSHA during abatement and clean up.

n) Materials will be removed and bagged daily. No ACM debris shall be left on the floor during the work shift or overnight.

o) Bagged waste will be removed from the work area, double bagged in either the decontamination area or separate bag exit chamber, and stored in a stationary, sealed container.

4.6 Final Clean-Up of Containment Area:

a) All surfaces in the work area shall be cleaned using a fine spray or mist of amended water or removal encapsulant followed by wet wiping using disposable cloths. These cloths shall be disposed of or rinsed thoroughly and frequently to prevent visible accumulation of debris. Surfaces must be allowed to dry before proceeding to next cleaning step.

b) After a satisfactory pre-sealant inspection, all surfaces not undergoing abatement are to be coated with sealant. Surfaces to be sealed include polyethylene that has been used to cover walls, floors and ceiling non-removal fixtures. After encapsulant dries, the first layer of polyethylene sheeting shall be removed, rolled up (contaminated side inward) and packaged properly for disposal. Wet cleaning of all walls, floors, ceilings and other fixtures and surfaces shall then be completed. Allow for surfaces to dry and repeat procedures. Plastic used to maintain critical barriers shall not be removed until final air clearance has been achieved.

c) After completion of clean-up operations, the Contractor shall notify the asbestos safety control monitor that an inspection is required prior to air clearance testing to ensure that no visible asbestos remains. After air samples are found to have airborne fiber concentrations of less

than 0.010 f/cc final area breakdown, encapsulation of abated surfaces and removal of critical barriers may begin. If results are found to be above the acceptance criteria, the clean-up shall be repeated until compliance is achieved. Only after acceptable levels are achieved may the critical barriers be removed. The inside of windows shall be washed. All repairs and refinishing shall be performed.

d) Notice for a final inspection shall be made by the Owner(s) or Contractor to the asbestos air sampling technician. Upon satisfactory inspection application for the Certificate of Completion may be made.

5.0 Personnel Qualifications

5.1 All Contractor personnel involved with asbestos work must be trained and tested prior to any work, and shall be thoroughly familiar with the Contractor's standard operating procedure for the abatement work. All personnel shall undergo the specific medical examinations required by OSHA. The superintendent and the foreman shall be thoroughly familiar with all applicable regulations and practices for asbestos work and shall have participated in at least two abatement projects of similar size and scope within the past two years. All personnel shall be in possession of valid respirator fit test paperwork.

Anyone without the above qualifications shall not be allowed to work during the abatement phase at any time.

Superintendent and supervisor qualifications shall consist of:

a. Training and knowledge of applicable regulations and expertise in safety and environmental protection as evidenced by the participation in successful completion of, and certification by a training course offered by a NYC-DEP and NYS-DOL approved Asbestos Supervisor's course.

b. Experience with abatement work as evidenced through participation in at least two asbestos abatement projects, similar in size and scope to this project.

c. Fluency in English and the languages spoken by all employees, or a designated interpreter for each language shall be available on each shift. A list of designated interpreters and their work schedules shall be provided for the Owner(s).

5.2 The superintendent or supervisor shall maintain a permanently bound project logbook that will:

a. Identify the facility, Owner(s), Agent, Contractors and project.

b. Define each work area.

c. Record completely all pertinent facts relating to the project.

d. Record date, time and name after each entry.

e. Have a daily sign-in for each and every individual entering into the work area. They must provide, in legible print, name (first and last), worker license number, the time and date entered and exited and proof of approved visitor status.

f. Dates of inspections and documentation of pass/fail of inspections.

g. A summary of work accomplished at the end of each shift.

h. Notes and comments.

5.3. The project supervisor shall also be responsible for the following tasks:

a. Assuring that the decontamination chambers are kept clean.

b. Surveying the work area a minimum of two (2) times per shift for proper housekeeping, safety precautions, barrier integrity and integrity of any air hoses. He shall record objective observations.

c. Ensure that each worker is wearing proper personal protective equipment and is trained in its use, and shall instruct workers on evacuation procedures during air compressor breakdown.

d. Ensure that all workers are certified and licensed.

e. Take precautions to prevent over stressing workers.

f. Ensure worker qualifications consist of the following:

1) Training, as evidenced by the participation in, successful completion of, and certification by a NYC-DEP and NYS-DOL approved asbestos handler's course.

2) Familiarization with the standard operating procedures for asbestos abatement work.

3) Skills and experience with all phases of abatement work as evidenced by participation in at least two asbestos abatement projects similar in size and scope.

5.4 There shall be a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work in accordance with the required schedule. Since general work cannot start prior to the successful decontamination of the work area, it is imperative that a sufficient number of trained personnel be engaged throughout the abatement process. No untrained, unqualified or unapproved person shall be employed to hasten completion of the abatement work.

6.0 Owner(s) Responsibilities

6.1 The Owner(s) shall provide the utilities needed by the Contractor to complete the abatement project. Said utilities shall include electric current to supply negative air units, vacuums and other equipment needed within the work area and a water source at every floor.

6.2 The Owner(s) shall provide to the Contractor a list of all daily and emergency phone numbers needed during the course of the project including but not limited to fire, police, ambulance and other emergency services.

7.0 Responsibilities of the Environmental Consultant

7.1 The Environmental Consultant shall be hired by the Owner(s) and be independent of the Contractor on the job.

7.2 All air monitoring specified in the Air Monitoring Section of this Specification shall be adhered to by the Environmental Consultant.

7.3 The technician on site will make inspections after each stage of the work is completed to assure proper completion before the next stage begins. Inspections will take place after plastic enclosure is set up (prior to removal) and after clean up phase.

7.4 The Environmental Consultant is responsible for daily inspections during all phases of the removal project to ensure the work is being done properly with no outside work area contamination.

7.5 The Environmental Consultant has the authority to stop work due to lack of cooperation by the Contractor, contamination of areas outside the work area, or any violations of the Specifications, or Federal, State and Local regulations.

7.6 If any inspection fails, the Environmental Consultant shall notify the Contractor stating the reason for the failure. The Contractor shall correct the problem and the Environmental Consultant shall perform another inspection. This process shall be repeated until the Contractor's work has passed inspection.

7.7 If any air test exceeds acceptable levels (outside work area, greater than .01 f/cc; or inside work area levels exceeding OSHA standards), the Environmental Consultant shall notify the Contractor, who shall stop work and correct the problem immediately. If the fiber levels remain high the Environmental Consultant will stop the work until the Contractor corrects all problems. The Contractor shall be responsible for additional air monitoring and stand-by costs.

7.8 If the final air tests exceed 0.01 f/cc, the entire work area shall be re-cleaned immediately upon receipt of air test results. The area shall then be re-tested at no additional cost to the Owner(s).

8.0 Air Monitoring

8.1 The Contractor shall be responsible for conducting air monitoring required under OSHA standards (personal monitoring). The initial testing results will determine the level of respiratory protection necessary during the preparation phase of the abatement project. (See relevant Section in this document)

8.2 The Environmental Consultant hired by the Owner(s) will be responsible for the following:

a) Pre-testing in all proposed work areas in accordance with applicable regulations to determine the levels of airborne asbestos prior to abatement.

b) Continuous monitoring outside the work area during the abatement project. This is to ensure that air levels remain below .01 f/cc outside the work area.

c) Aggressive final air clearance testing in each work area after removal, encapsulation and cleanup have been completed, but before the critical barriers and decontamination chambers are removed. Aggressive samples are conducted with the use of at least one (1) horsepower leaf blower and fans. Each room of the work area shall have at least one (1) final air test.

d) The Contractor shall provide fans and leaf blowers required to conduct aggressive clearance monitoring.

8.3 All air samples shall be analyzed utilizing the NIOSH 7400 method using Counting Rules A.

9.0 Disposal of Asbestos Containing Waste

9.1 The Contractor shall transport all packaged asbestos waste to a landfill site approved by the New York State Department of Environmental Conservation (NYS-DEC). A licensed NYS-DEC registered waste carting company with a registered transfer station shall perform transportation. Companies operating under a consent order shall not be utilized. In the event that the Contractor utilizes an out of state disposal site, verifications of the disposal site must be submitted to show that the facility handles asbestos waste and is registered with the applicable regulatory agencies.

9.2 Labels are required on containers of ACM waste materials indicating the name of the waste generator and the location where the waste was generated.

9.3 The Contractor shall be responsible for ensuring that all such sealed containers are not ruptured during processing, including packaging, handling, loading, transporting and unloading. Any containers that are found to be ruptured upon arrival at the landfill shall be re-containerized by the Contractor immediately.

9.4 Upon completion of the project the Contractor shall provide a manifest or dump ticket, duly executed by the Contractor, transporter and disposal facility. The manifest shall be all-inclusive, describing volume of materials, dates of transport and date of disposal. A dump ticket shall be produced for each load.

9.5 The dumpster that is to receive asbestos material and all other refuse from the contaminated area is to be located adjacent to an exterior door as selected by the Contractor and approved by the Owner(s).

9.6 The dumpster is to be of the totally close-able variety and shall be kept closed and locked to prevent vandalism, and so that it is available only for the refuse from the asbestos removal area.

10.0 Contract Close-Out

10.1 The certification of final completion shall not be issued until the following conditions have been satisfied:

a. A final inspection by the Environmental Consultant reveals that no visible ACM exists in the designated work areas.

b. All inspections required by this Specification are passed.

c. Final air clearance tests indicate airborne asbestos fiber levels of less than 0.01 f/cc.

d. The Contractor submits copies of the results of OSHA personal monitoring.

e. The Contractor submits all required disposal documentation.

f. The Contractor has removed all debris, rubbish, tools, surplus materials, temporary buildings and temporary works from the work areas.

g. The Environmental Consultant shall issue a Certificate of Completion certifying that all conditions set forth in this Specification have been satisfactorily completed.

11.0 Authority To Stop Work

11.1 JLC shall have the authority to stop work at any time when conditions are not within the Specification requirements or applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of the Consultant or other authorized representative. Standby time required to resolve violations shall be at the Contractor's expense.

SECTION THREE: EXECUTION

After the contract has been executed, a pre-construction meeting is to be attended by the Owner, the Environmental Consultant, the Contractor (including an officer of the company and the) and the Owner's representative (Building Manager, Chief Engineer, Fire Safety Officer, and Secretary), at which the Contractor shall present in detail the following:

1.1 Proof of the written notification in accordance with 40 CFR Part 61.146 of Subsection M, to the appropriate state or federal air pollution control agency responsible for the enforcement of the National Emission Standard for Asbestos at least ten (10) days prior to the commencement of any on-site project activity. Provide the Owner(s) with a copy of the notice.

1.2 Any additional notifications as required by governing bodies (NYC-DEP, NYS-DOL).

1.3 Proof satisfactory to the Owner(s) that required permits, site location and arrangements for transport and disposal of asbestos containing waste materials have been made.

1.4 Documentation satisfactory to the Owner(s) that the Contractor's employees, including foremen, supervisors, and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received adequate training and are properly licensed by the appropriate agencies. This includes NYC-DEP and NYS-DOL licenses for each employee working on the site.

1.5 Documentation of respirator fit testing for all Contractor's employees and agents who must enter the work area. This fit testing shall be conducted in accordance with qualitative procedures as required by OSHA.

1.6 Physician's documentation that all employees or agents who may be exposed to airborne asbestos in excess of background level 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. In addition submit documentation that personnel have received medical monitoring as required by OSHA regulations. The Contractor must be aware of and provide information to the examining physician regarding unusual conditions in the work place environment (e.g., high temperatures, humidity and chemical contaminants) that may impact on the employees' ability to perform work activities.

1.7 A copy of the Contractor's and all Sub-Contractors' insurance certificates.

1.8 Manufacturer's certification that HEPA vacuums, required HEPA equipped ventilation units and other local exhaust ventilation equipment conform to ANSI Z9.2-79.

1.9 When rental equipment is to be used in abatement area or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the Owner(s)

1.10 MSHA/NIOSH approval documents for all respiratory protective devices utilized on site, including manufacturer certification of HEPA filtration capabilities for all cartridges and filters

1.11 Respiratory system information, including manufacturer's literature describing the air supply system and illustrating that it meets the specifications on supplying Grade "D" breathing air.

1.12 Copies of the Contractor's training program, safety manuals and policies, and his written respiratory protection program.

1.13 Standard operating procedure showing how workmen, visitors and Owner's employees will be protected from exposure, how space outside the work areas will be protected from contamination through completion of work, work procedures utilized during the project and final clean-up/decontamination procedures to be implemented.

1.14 The system, warning signs and labels for bags and drums.

1.15 Fire and emergency evacuation plan.

1.16 Plan for communication system between work area and outside (if necessary).

1.17 Engineering systems for exposure control showing the number, location and capacity of air supply and exhaust systems, the expected direction of flow and the maximum and minimum negative pressure allowed for each work area.

1.18 A list of equipment planned for use during this project, including manufacturer's literature and certifications if appropriate.

1.19 The Identification of encapsulant and material safety data sheets (MSDS).

1.20 The telephone location with ready access.

1.21 The secured locations for storage of Contractor and Consultant's equipment.

1.22 An approved visitor’s list if necessary.

1.23 Project schedule with shift times and total number of shifts.

2.0 Progress Meetings and Submittals during the Work

Progress meeting will be held when specifically requested by the Client and will include representatives of the Owner(s), Contractor and Consultant at which time the following shall be discussed and submitted:

a. Security and safety logs showing names of persons entering the work space, date and time of entry or exit, record of any accident,

emergency evacuation, any other safety and/or health incident and the documentation of filter changes on respirators, HEPA equipped ventilation units and other engineering controls.

b. Required permits, clearances, licenses, etc.

c. Job progress reports detailing work activities, including review of progress with respect to previously established milestones and schedules, major problems and actions taken, injury reports, equipment breakdown and bulk material and air sampling results conducted by consultant.

d. Submit copies of all current transport manifests, trip tickets and disposal receipts for all asbestos waste materials removed from the work area during the abatement process.

e. Submit copies of all MSDS as required under the OSHA Hazard Communication Act OSHA 1900.1200.

3.0 Standard Operating Procedures

A written description of Contractor's standard operating procedures for completing the work shall be submitted to ensure maximum protection and safeguard from asbestos exposure to workers, visitors, employees and the environment. The standard operating procedure shall consist of:

a. Methods to maintain security to prevent unauthorized entry into the work space.

b. Maintenance of an entry log record that ensures that the Contractors' personnel are in accordance with the NYS and NYC regulations.

c. Proper protective clothing and respiratory protection use prior to entering the work area. Safe practices to prevent accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.

d. A survey of the work areas at a minimum of once per work shift to ensure that the workers, personal protective equipment is not ripped or torn and that respiratory protection is worn at all times and that engineering systems used minimize exposure to fibers in the work space are in place.

e. Safe work practices including, provisions for inter-room communications and the exclusion of eating, drinking, smoking and any activity that may break a respiratory protection seal.

f. Proper exit procedures from the work space to the outside through the decontamination facility.

g. Methods for packaging, labeling, loading, transporting, and disposing contaminated material in a way that minimizes exposure and contamination.

h. Emergency evacuation procedures for medical or safety reasons (i.e. fire and smoke) so that exposure to ACM shall be minimized.

i. Provisions for effective supervision, including personal air monitoring and any general area air monitoring during the work.

4.0 Notification, Variances, Permits, Warning Signs, Labels, and Posters

4.1 **Notifications:** The Contractor shall provide required notification to regional, state and local authorities having jurisdiction on the project. The Contractor shall also secure all permits required for the work, including disposal of asbestos in an approved landfill.

4.2 **Variances:** The Contractor shall be responsible for obtaining any variances to perform the abatement work. The variance request shall be submitted to the owner's Environmental Consultant for approval prior to submission to the NYC-DEP. Payment of fees for the processing of any variance request; shall be made by the Contractor.

4.3 **Warning Signs, Labels & Posters:** The Contractor shall erect warning signs around the work space and at every point of potential entry from the outside at least seven days prior to the start of the work. Signs should be in accordance with OSHA standard 29 CFR 1910.1001. The warning signs shall be a bright color so that they will be easily noticeable. The size of the sign and the size of the lettering shall conform to the OSHA requirements.

The contractor shall Provide the OSHA and NESHAPS required labels for all plastic bags and all drums utilized to transport asbestos contaminated material to the landfill.

The contractor shall provide any other signs, labels, warning and posted instructions that are necessary to protect, inform and warn people of the hazard from asbestos exposure these shall be Posted in a prominent and convenient place for the workers, a copy of the latest applicable regulations from OSHA, EPA, NIOSH and the City and State of New York.

5.0 Emergency Precautions

5.1 The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of Sub-Contractors, Client's employees and representatives, State and Local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean room of the worker decontamination facility.

5.2 A logbook shall be maintained in the clean room area of the worker decon system. Anyone who enters the work area must record his name, affiliation, time in and time out for each entry.

5.3 Entry into the work area by unauthorized individuals shall be reported immediately to the Client by the Contractor. These events should be clearly detailed in site logbook.

5.4 Access to the work area shall be through a single worker decon system located at a designated location of the work site. All other means of access (doors, windows, hallway, etc.) shall be blocked or locked to the prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out air lock that shall be sealed except during the removal of containerized asbestos waste from the work area and emergency exits for use in case of fire and/or accident. Emergency exits shall be sealed with fire retardant polyethylene sheeting and tape until needed. These emergency exits shall be clearly marked in English and the language of a majority of the workers.

5.5 The Contractor should have control of site security during all operations whenever possible, in order to protect work efforts and equipment.

5.6 The Contractor shall have the Client's or Owner's assistance in notifying building occupants of impending activity and enforcement of restricted access by all employees.

6.0 Emergency Planning

6.1 Emergency planning and procedure shall be developed by the Contractor prior to abatement initiation and agreed to by the Contractor and Owner(s).

6.2 Emergency procedures shall be in written form and conspicuously posted in the clean change area and equipment room of the worker decon area.

6.3 Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

6.4 Emergency planning shall include written notification to police, fire, and emergency medical personnel of planned abatement activities, work schedule and layout of the work area, particularly barriers that may affect response capabilities.

6.5 Emergency planning shall include consideration of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

6.6 Employees shall be trained in evacuation procedures in the event of work place emergencies.

6.7 For non-life threatening situations, follow normal procedures with assistance from fellow workers if necessary, before exiting the work place to obtain proper medical treatment.

6.8 For life-threatening injury or illness, worker decontamination shall take least priority. After measures to stabilize the injured worker, remove him from the work place and secure proper medical treatment.

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

7.0 Fire Protection

7.1 The Contractor shall comply with all local fire safety regulations, rules and standards.

7.2 The Contractor is to ensure that the required exits from the work site are not impaired and that fire watches are set where necessary.

7.3 The Contractor and the Owner(s) are to meet with a representative of the Owner(s) who is responsible for the facility fire safety programs. This on-site meeting is for the purpose of informing the fire safety representative of the scope of activity, the nature and location of temporary equipment, barriers, or other construction, the location of fire exits, and to provide the general inspection of the work area for potential fire code shortcomings.

7.4 The Contractor will be required to meet any and all recommendations for job site safety and be required by the Owner(s) and/or fire safety representative to meet their recommendations.

7.5 The Contractor shall maintain adequate fire extinguishers (Class A, B, & C) ready for immediate use and distributed throughout the work area and in and about flammable temporary structures for the duration of the project. A minimum of one (1) such approved fire extinguisher must be available inside the work area if necessary, and others added at the rate of one (1) for every additional 1,000 square feet of work area (or at a rate determined by the fire safety representative).

7.6 Internal combustion engines may NOT be operated within the work site. No gasoline or other flammable liquids may be stored in or adjacent to the work area nor may flammable liquids or other substances be dispensed or handled within or adjacent to the work area. The Contractor shall not bring flammable liquids/substances onto the Owner's property without express, prior written permission from the Owner(s).

7.7 Exits from the work areas and emergency exits shall be established in accordance with applicable codes and regulations. Exits shall be checked daily for any exterior blockage or impediments to egress.

7.7 Work area barriers, etc. shall be clearly marked with information concerning fire exits, etc., so as to meet the requirements of this specification, the Owner(s), and fire code/department.

SECTION FOUR: REQUIREMENTS FOR PROTECTIVE EQUIPMENT

1.0 Respiratory Protection

1.1 Respiratory protection shall be worn by all individuals inside the work area from the initiation of the asbestos project until all areas have successfully passed clearance air monitoring.

a) All respiratory protection shall be MSHA/NIOSH approved in accordance with the provisions of 30 CFR Part 11. All respiratory protection shall be provided by the Contractor and used by workers in conjunction with the written respiratory protection program.

b) The Contractor shall provide all workers, foreman, superintendents, authorized visitors and inspectors personally issued and marked respiratory equipment approved by NIOSH and MSHA. When using respirators with disposable filters, the Contractor shall supply replacements after every shift.

c) Workers shall be provided with personally issued and individually marked respirators. Respirators shall not be marked with any instrument that will alter the fit of the respirator in any way. Only waterproof identification markers will be used.

d) The Contractor shall ensure that the workers are qualitatively or quantitatively fit tested for any negative pressure respirator by an Industrial Hygienist initially and every six months thereafter with the type of respirator he will be using. Qualitative fit testing may only be used for half-mask respirators.

e) Whenever the respirator design permits, workers shall perform the positive and negative air pressure fit test each time a respirator is worn. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.

f) No facial hair (beards) shall be permitted to be worn when wearing respiratory protection that requires a mask to face seal.

g) Contact lenses shall not be worn in conjunction with respiratory protection on asbestos projects.

h) If a worker wears glasses, a spectacle kit to fit their respirator shall be provided by the Contractor at the Contractor's expense.

i) Respiratory protection maintenance and decontamination procedures shall meet the following requirements:

1) Respiratory protection shall be inspected and decontaminated on a daily basis in accordance with OSHA 29 CFR 1910.134(b).

2) HEPA filters for negative pressure respirators shall be changed after each shower.

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 NYC-DEP regulation section 8222.

4) Air-line respirators with HEPA-filtered disconnect shall be disconnected in the equipment room and worn into the shower. Powered air-purifying respirator face pieces shall be worn into the shower. Filtered/power pack assemblies shall be decontaminated in accordance with manufacturer's recommendations.

5) Respirators shall be stored in a dry place and in such a manner that the face piece and exhalation valves are not distorted.

6) Organic solvents shall not be used for washing of respirators.

j) Authorized visitors shall be provided with suitable respirators and instruction on the proper use of respirators whenever entering the work area. Fit testing shall be done to ensure proper fit of respirator.

1.2 The minimum respiratory requirements for this project are as follows:

a) Half-mask or full face air-purifying respirators with HEPA filters shall be worn during the preparation of the work area, performance of repairs (e.g. using glovebag techniques), during removal techniques and final cleanup procedures provided airborne fiber concentrations inside the work area are less than 0.1 f/cc.

b) Full face piece powered air-purifying respirators (PAPR) equipped with HEPA filters shall be worn during the removal, encapsulation, enclosure, repair and/or other disturbance of friable ACM whenever airborne fiber concentrations inside the work areas are equal to or greater than 0.1 f/cc and less than 2.0 f/cc. 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. Any type C supplied-air respirator operated in continuous flow may be substituted for a powered air-purifying respirator.

c) Full face piece type C supplied-air respirators operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be worn during gross removal, demolition, renovation and/or other disturbance of ACM whenever

airborne fiber concentrations inside the work area are equal to or greater than 10.0 f/cc.

d) Full face piece type C supplied-air respirators operated in pressure demand mode with HEPA filter disconnect protection shall be worn during gross removal, demolition, renovation and/or other disturbance of ACM whenever airborne fiber concentrations inside the work area are equal to or greater than 2.0 f/cc and less than 10.0 f/cc.

e) Use of single use dust respirators is prohibited for the above respiratory program.

2.0 Personal Protective Equipment

2.1 The Contractor shall provide to all workers, foremen, superintendents and authorized visitors and inspectors, protective disposable clothing consisting of full body coveralls and head covers.

2.2 The Contractor shall provide eye protection (contact lenses shall not be worn and spectacle kits which fit each personal respirator shall be issued), hard hats and safety shoes as required by job conditions and safety regulations. Safety shoes and hard hats shall be approved in accordance with ANSI Z89.1 1969 and ANSI Z41.1 1967.

2.3 Reusable footwear, hard hats and eye protection shall be left in the "Contaminated Equipment Room" until the end of the asbestos abatement work.

2.4 All disposable protective clothing shall be discarded and disposed of as asbestos waste every time the wearer exits the work area to the outside area through the decontamination facilities.

2.5 If it is absolutely necessary that non-disposable clothing be worn for the asbestos project, laundering services shall be conducted in accordance with 29 CFR 1926.58.

SECTION FIVE: DECONTAMINATION ENCLOSURE SYSTEM

1.0 Construction of Decontamination Enclosure System

1.1 For each work area the Contractor shall provide decon facilities located in a location agreed upon by the Owner(s)/Client. The decontamination facilities shall include one (1) DES (DES) for every six workers and another for loading asbestos out of the work area for transportation to the landfill. Decon facilities should be constructed in accordance with the applicable Federal, State and Local regulations including applicable variances.

1.2 The DES for workers and authorized visitors shall consist of three rooms equipped with three (3) air locks as follows: 1) clean room at entrance and air

lock, 2) shower room at center and airlock, and 3) equipment room/decon room leading to the work area and airlock.

1.3 The DES for transporting asbestos out of the removal area shall consist of the following 1) an air lock from the work area followed by, 2) a bag wash and wipe room area, and 3) an air lock/load out area leading into the non-contaminated clean area.

1.4 The Contractor shall provide or post the following in the clean room:

a. A copy of the (US EPA) Regulations for Asbestos, 40 CFR 61 Sub Parts A and M and a copy of OSHA Asbestos Regulations, 29 CFR 1926.5.

b. A list of telephone numbers for local hospitals, location of hospitals and/or emergency squad, local fire department, the Owner(s) and the NYC-DEP Asbestos Control Program.

c. A copy of all Material Safety Data Sheets (MSDS) for hazardous chemicals used during the asbestos project.

d. Provide lockers or pegs for storage of workers' street clothes in the clean room. Provide in the same room uncontaminated disposable protective clothing and equipment. The clean room shall be used to change from street clothes in into disposable protective clothing prior to entering into the contaminated area. Additionally, the clean room shall be used to dress into street clothing after they have showered and dried in the shower room as they exit from the contaminated area.

e. Provide shower facilities with hot and cold water arranged to provide complete showering of workers and visitors as they exit contaminated areas. Provisions shall be made to prevent contaminated water run-off from the shower room. The shower room facilities and size shall be adequate to allow decontamination and thorough washing of all workers and authorized visitors within the 15 minutes escape time allowed in the event of air compression failure.

f. There shall be one (1) shower per six (6) full-shift abatement personnel calculated on the basis of the largest shift.

g. Provide the equipment room with storage for contaminated clothing and equipment. In this room, workers and authorized visitors shall dispose of their protective clothing except the respirator, as they prepare to enter the shower room.

h. The asbestos contaminated waste bags wash and wipe room shall be equipped with the facilities to wash and wipe the outside of the bags prior to removing them from the work area for transportation to the landfill. Provisions must be made to prevent any contaminated water run-off from the bag wash and wipe room.

i. All asbestos contaminated water shall be filtered or treated as asbestos containing waste. The water shall be drained, collected and filtered through a system with at least 5.0 micron particle size collection capability. A system containing a series of several filters with progressively small pore sizes shall be used to avoid rapid clogging of the filtration system by large particles. Filtered wastewater shall be discharged into a sanitary sewer. Used filters shall be disposed of as asbestos containing waste.

2.0 Work Place Entry and Exit Procedures

2.1 The Contractor shall provide all personnel with the specified protective clothing and gear prior to entrance into work area.

2.2 The contractor shall ensure that all personnel entering and exiting the work area or site abide by the following procedures:

a. All workers and authorized personnel shall enter the work area through the worker DES.

b. Before entering the work area a personnel shall read and be familiar with all posted regulations, personal protection requirements (including work place entry and exit procedures) and emergency procedures. A sign off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.

c. All personnel shall proceed to the clean room, remove all street clothes and don appropriate respiratory protection.

d. Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room and equipment room into the main work area.

e. While inside the work area there shall be no smoking, eating, drinking, chewing of gum or tobacco or wearing of jewelry.

f. Before leaving the work area all personnel shall remove gross contamination from the outside of their respirators and protective clothing by brushing, vacuuming or wet wiping procedures.

g. Personnel shall proceed to equipment room where they shall remove all protective equipment except respirators.

h. Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area.

i. While still wearing respirators personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator, then shower and shampoo to remove residual asbestos contamination. Filter cartridges must be replaced for each new entry into the work area.

j. After showering and drying off, workers may proceed to the clean room and don street clothing.

3.0 Waste Container Pass-Out Procedures

These procedures shall be followed during the removal of waste from the work area:

3.1 Asbestos contaminated waste that has been containerized shall be transported out of the work area through the waste container enclosure system (or through the worker decon. enclosure if a separate waste chamber has not been constructed).

3.2 Waste pass-out procedures shall utilize two teams of workers, an "inside" team and an "outside" team.

3.3 The inside team, wearing appropriate protective clothing and respirators shall clean the outside, including bottoms, of properly labeled containers (bags, drums, or wrapped components). Using HEPA vacuums and wet wiping techniques, they shall transport the containers into the waste container pass-out air lock. No worker from the inside team shall further exit the work area through the air lock of the enclosure system.

3.4 The outside team, wearing protective clothing and appropriately assigned respirators, shall enter the air lock from outside the work area, enclose the containers in clean, labeled, 6-mil polyethylene bags or sheeting as the items' physical characteristics demand, and remove them from the air lock to the outside. No worker from the outside team shall further enter the work area through this air lock, which shall be secured to prevent unauthorized entry.

SECTION SIX: TEMPORARY FACILITIES AND EXPOSURE CONTROLS

1.0 Temporary Facilities

1.1 Owner(s) will provide water and electricity at the site without charge to the Contractor, and under the following requirements:

a. Electrical connections adjacent to the work area shall be provided to the Contractor.

b. The Contractor shall provide all ground fault interrupters (GFIs), wiring, lighting switches, outlets, etc., and shall be in accordance with all Federal, State, and Local Underwriters Laboratories (UL) requirements. Installation shall be the responsibility of the Contractor.

c. The Contractor shall be responsible for any damages caused by them to the Owner's electrical system.

d. The Contractor shall provide adequate temporary lighting within the work area.

e. The Contractor shall take all appropriate precautions and steps necessary to protect all people from the hazards involved with electricity and liquids inside the work area.

f. All connections to the building's water system by the Contractor shall be equipped with back flow protection.

g. All fittings, valves, hoses, etc utilized must be temperature and pressure rated for the project's conditions.

1.3 The Contractor may be provided with a temporary field office and storage space at the approval of the Owner(s).

2.0 Temporary Exposure Controls

2.1 The Contractor must provide supplied air and exhaust to and from the work area to maintain negative air pressure. The ventilation system shall operate on a 24-hour basis throughout the abatement process and throughout the wet cleaning. The ventilation system shall be in accordance with EPA recommendations included in the "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings" and current OSHA standards.

2.2 A static negative air pressure of 0.02 inches (minimum) water column shall be maintained at all times in the work area during abatement to ensure that contaminated air in the work area does not escape into the outside via the work area entry way.

2.3 Damage and defects in the enclosure system are to be repaired immediately upon discovery.

2.4 Smoke tubes shall be used to test the effectiveness of the work area barrier and the worker and equipment decontamination systems before abatement work begins with the negative pressure ventilation units in operation and at least once a day thereafter until the work is completed. Results and observations shall be documented in the project logbook.

2.5 At any time during the abatement activities after barriers have been erected, if visible material is observed outside of the work area or if damage occurs to barriers, work shall stop immediately, repairs made to barriers, and debris/residue cleaned up using appropriate HEPA vacuums or wet mopping procedures.

2.6 If samples collected outside of the work area during abatement activities indicate airborne fiber concentrations greater than 0.01 f/cc or pre-measured background levels (whichever is lower), work shall immediately stop for inspection and repair of barriers. Cleanup of surfaces outside of the work area, using HEPA vacuums or wet cleaning techniques, may be necessary.

b. Disposal shall be at an approved landfill, transfer at a licensed transfer station and a manifest form will be signed by the landfill owner documenting receipt and acceptance of the ACW.

SECTION SEVEN: METHODS OF REMOVAL

1.0 Materials and Equipment

1.1 All materials subject to damage shall be stored off of the ground, away from wet or damp surfaces, and under a protective cover to prevent damage or contamination. Replacement materials shall be stored outside the work area until abatement is completed.

1.2 Damaged or deteriorated materials shall not be used and shall be removed from the premises.

1.3 When ACM that has been used for fireproofing or insulation is removed, equivalent protection shall be provided with non-ACM in conformity with all applicable NYC codes.

1.4 Fire retardant polyethylene sheeting or spray-plastics of 6-mil thickness or greater, in sizes to minimize the frequency of joints, shall be employed for containment.

1.5 Duct tape or equivalent shall be capable of sealing joints of adjacent sheets of plastic, facilitating attachment of polyethylene to finished or unfinished surfaces of dissimilar materials, and adhering under both dry and wet conditions, including during the use of amended water.

1.6 Spray adhesives capable of providing additional sealing of joints and facilitating the attachment of polyethylene to finished or unfinished surfaces shall be used where needed. Adhesives shall be capable of adhering under both dry and wet conditions, including during the use of amended water.

1.7 The encapsulant utilized shall be EPA approved and be of the penetrating type. The encapsulant shall be sprayed on by means of an airless sprayer and shall be compatible with the Owner's new non-asbestos fireproofing.

1.8 The surfactant shall be a product that is non-toxic, non-carcinogenic and non-irritating to the eyes, respiratory system and skin.

1.9 Airtight and watertight containers shall be provided to receive and retain any asbestos-containing or contaminated materials for storage until disposal at a disposal site. The containers shall be labeled in accordance with OSHA Regulations 29 CFR 1926.58. Plastic bags used for waste storage or disposal shall be 6-mil in thickness minimum and be marked with danger labels in accordance with OSHA Regulation 29 CFR 1926.58 k (2).

1.10 Adequate HEPA filter equipped ventilation units, including HEPA filter replacements, shall be provided by the contractor.

1.11 The contractor shall provide tools, respirators, and filter replacements necessary.

1.12 The Contractor shall provide the necessary water filtration units to filter wastewater through a 0.5 micron final filter.

1.13 The Contractor shall have available ladders and/or scaffolds of sufficient dimension and quantity so that all work surfaces can be easily and safely reached by inspectors. Scaffold joints and ends shall be sealed with tape to prevent incursion of asbestos fibers. Scaffolding shall comply with the OSHA requirements.

2.0 Work Area Preparation (Full Enclosure Containment)

2.1 The Owner(s) or designated representative shall provide notification to all occupants of the work place and immediately adjacent areas of the asbestos project.

2.2 The work place shall be vacated by the occupants prior to work area preparation and until successful clearance air monitoring.

2.3 The Contractor shall post caution signs meeting the requirements specifications of OSHA General Industry Safety Order Section 1926.58 K(2) and other applicable regulations at appropriate approaches to locations where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area so as to permit an employee to read the sign and take necessary precautions to avoid exposure. Additional signs may require posting upon construction of work place enclosure barriers.

2.4 The Contractor shall have at least one responsible person able to communicate effectively in English at the work site at all times. Failure of this provision shall result in stoppage of work, which shall not resume until such person is present at the work site.

2.5 The Contractor shall provide sanitary facilities for abatement personnel outside of the enclosed work area and maintain them in a clean and sanitary condition throughout the project.

2.6 The Contractor shall perform work including waste material removal only when the building ventilation system is inoperative.

2.7 The Contractor shall wet clean and remove all removable items from the work area. Upholstered furniture, carpeting and drapes shall be HEPA-vacuumed before removal from the work area. If carpeting is left in place, it shall be covered with 6-mil fire retardant polyethylene, and then with a one-half inch (1/2) thick rigid flooring material prior to normal plasticizing.

2.8 Under the direction of the Owner(s) or his authorized representative, the Contractor shall shut down and lock out electrical power to all work areas and/or non-critical apparatus. The Owner(s) shall provide and ensure safe installation of temporary power sources and equipment, giving special attention to areas of high humidity and/or sprayed water. Installation must

comply with all applicable codes. All power to work areas shall be brought into the area through ground-fault interrupters positioned at the source.

2.9 The Contractor shall shut down, lock out and isolate all HVAC systems to prevent contamination and fiber dispersal to other areas of the structure, or perform the work only at such times the HVAC units are inoperative.

2.10 The Contractor shall shut down, isolate and seal all return air shafts with a minimum of 18-mil fire-retardant polyethylene sheeting or equivalent (three layers of 6-mil) placed over a 3/8inch plywood "plug" that is sealed airtight into the ductwork.

3.0 Floor and Wall Preparation

3.1 All remaining non-removable items within the work area with shall be covered with two layers of 6-mil fire retardant polyethylene sheeting taped securely.

3.2 Cover all remaining pre-cleaned floors with two layers of 6-mil (minimum) fire retardant sheeting or equivalent. Additional layers of sheeting may be utilized as drop cloths to aid in the cleanup of bulk materials.

3.3 Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. A distance of at least 6 feet between seams is sufficient. Do not locate any seams at wall-floor joints.

3.4 Floor sheeting shall extend at least twelve inches (12 inch) up the sidewalks of the work area.

3.5 All seams shall overlap a minimum of 12 , and be secured by first applying spray adhesive and then firmly securing the sheets with tape.

3.6 All critical barriers shall be constructed according to Section 7.0.

3.7 Cover all remaining walls and windows within the work area with two (2) layers of 6-mil fire retardant polyethylene sheeting or equivalent.

3.8 Each layer of fire retardant polyethylene sheeting shall be taped securely to the wall or window. Layers shall not be taped to each other.

3.9 Plastic shall be sized to minimize seams. Seams shall be staggered and separated by at least 6 (6) feet.

3.10 Wall sheeting shall overlap floor sheeting by at least 12inch beyond the floor/wall joints.

3.11 Wall sheeting shall be secured to prevent it from falling away from the walls. This may require additional support or attachments when negative pressure ventilation systems are turned on.

3.12 Caulk or seal edges of sheeting at floor, ceiling, walls and fixtures to form an airtight seal.

3.13 All entrances to the work place not used for worker entry or emergency exits shall be locked and sealed to prevent unauthorized entry.

4.0 Enclosure System and Controls

4.1 The Contractor shall install the DES before any work is performed within the work area.

4.2 The DES shall be built in such a way as to minimize employee exposure when exiting or while passing through adjacent area.

4.3 Constant air monitoring will be conducted in these adjacent areas by the Owner(s) representatives. If fiber levels exceed 0.01 f/cc, all non-licensed workers will be barred from this area, work shall cease, the area shall be cleaned and any problems shall be corrected prior to re-commencement of work.

5.0 Critical Barrier Installation

5.1 The Contractor shall seal all openings from the work area to occupied areas of the building including:

a. Fire Exits must be accessible at all times and each should be equipped with an emergency egress air lock to be utilized only in an emergency.

b. Barriers: Critical barriers shall be installed prior to the disturbance of any ACM. Critical barriers (barriers that separate the protected work area from unprotected non-work areas) shall be 18-mil (3 layers of 6-mil) fire retardant polyethylene sheeting, individually secured (spray adhesive, then taped), and held in place by wooden frame- work.

a. This framework shall be covered with 3/8-inch minimum sheet-rock material or equivalent, caulked at all joints to provide an airtight seal and shall provide support in both floor ceiling, and work area-non-work area directions.

c. Additional barriers (i.e., sealing off all openings, including but not limited to windows, corridors, doorways, barriers, skylights, ducts, grills, diffusers, and any other penetrations of the work place) shall be installed with two (2) layers of 6-mil fire retardant polyethylene sealed with tape. All seams of HVAC or other system components that pass through the work place shall also be sealed.

5.2 Should critical barrier erection disturb any ACM, the material shall first be removed by application of amended water and removal using tent procedures and HEPA vacuuming with a funnel attachment. These procedures shall be

limited to a maximum of one-foot wide strip spanning the length of the partition.

5.3 The Contractor shall clean all floors and dispose of any dislodged ACM in accordance with applicable regulatory requirements. Appropriate respiratory and protective equipment shall be worn during this operation.

6.0 HVAC Ductwork

This section refers to any uninsulated ductwork that passes through a containment area.

6.1 Any ductwork attached directly to the ceiling duct shall be positioned in such a way as to facilitate removal of the ACM above the duct. If this ductwork is removed it may either be:

a. Completely sealed with (2) layers of 6-mil fire retardant polyethylene, properly labeled and disposed of as contaminated.

b. Completely decontaminated inside and out, encapsulated, and disposed of as normal waste.

7.0 Light Fixtures

7.1 All light fixtures within the work area must be considered contaminated and treated as follows:

a. Lower light fixtures after isolation and critical barriers are in place.

b. HEPA vacuum and brush off gross contamination within the work area.

c. Wet wipe each fixture completely as it is taken out through the bag wash/wipe area. Each fixture must be thoroughly inspected for visible asbestos before being transferred to the clean area.

d. At the discretion of the Owner(s) either dispose of as waste or store all fixtures until work is complete.

e. When the area has been deemed clean, a qualified electrician may reinstall the light fixtures.

7.2 If agreed upon by the Owner(s), used light fixtures will be double wrapped in 6-mil labeled and disposed of as contaminated waste.

7.3 If agreed upon by the owners and the Contractor, the light fixtures may remain in place. If so the Contractor must abide by the following procedures.

a. Electrical power to the fixtures must be shut down and locked out.

b. Fixtures must be thoroughly HEPA vacuumed and wet wiped.

c. Clean fixtures should be protected with two layers of 6-mil fire retardant polyethylene sheeting during the removal activities.

8.0 Asbestos Containing Material Removal

8.1 Roof Membrane, Perimeter Flashing, Flashing Tar, Parapet & Bulkhead Tar, Pitch Pocket and Tar Paper over Plywood Removal:

Removal of ACM on the roof shall be performed utilizing DEP Attachment FR "Procedures for Use of Foam or Similar Viscous Liquid in Removal of Asbestos Containing Roofing Material (ACRM) in New York City".

1. Preliminary examination shall be conducted and precautions taken to prevent damage to the interior of the building and to ensure no adverse effect on the structural stability of the roof due to abatement activity.

2. Abatement shall not be carried out during adverse weather conditions (e.g. precipitation, heavy winds, etc.).

3 The work area on the roof shall be cordoned off and only authorized persons shall have access to the work area. In addition, electric power in the work area shall be shut down and isolated.

4. Movable objects shall be removed from the work area or kept in place and wrapped in one (1) sheet of 6-mil polyethylene. Fixed objects including perimeter walls, bulkheads, cooling towers, ducts and other rooftop appurtenances shall be covered in one sheet of plastic to a minimum height of 6 feet.

5. The worker decon unit shall be constructed at an entry/exit from each work area in accordance with 15 RCNY § 1-117, with at least a shower room and a clean room. In addition to the shower head(s), the shower room shall be equipped with a flexible hose for waste decontamination (for removal of less than 1,000 square feet). For more than 1,000 square feet of removal, a separate waste decontamination facility as per 15 RCNY § 1-118 shall be located at an entry/exit from each work area.

6. Remote decontamination facilities will be considered however a variance must be requested from 15 RCNY § 1-117(a) and, also from 15 RCNY § 1-118 (if more than 1,000 square feet will be removed).

7. The remote holding area for the asbestos containing waste shall comply with Title 16, Chapter 8, Rules of the City of New York. (16 RCNY 8 et seq.).

8. Provisions shall be made to ensure a safe and adequate air supply to affected building(s). All vents, skylights, air intakes, windows and doors opening onto the roof, and all other openings are to be sealed

with 2 layers of 6-mil plastic or fitted with HEPA-filters where appropriate. In lieu of sealing vents, air intakes, etc., with 2 layers of plastic or HEPA-filters, temporary extensions may be installed to a height of 10 feet to ensure adequate air exchange. Drains may be equipped with 5 micron filtering systems in lieu of being sealed.

9. Prior to actual removal, the built-up roofing and flashing shall be blanketed and wetted with a minimum (1) inch coating of the acceptable foam or viscous liquid that shall be maintained for the duration of the removal until the material is bagged. The foam or viscous liquid shall be confined to the work area. The foam or viscous liquid shall:

    a. Be non-toxic and shall not require special respiratory protection for handling
    b. Wet the asbestos containing roofing material (ACRM) and remain wet through the bagging process.
    c. Leave an identifiable color residue when it dissipates
    d. Not require special disposal

10. Manual methods of removal are recommended, however if hand-held power tools are used to drill, cut into, or otherwise disturb the ACRM, the power tools shall be equipped with HEPA-filtered local exhaust ventilation and operated to prevent potential fiber release.

11. Portable HEPA-vacuum machines shall be available during abatement.

12. After ACM removal and bagging, the bagged waste shall be HEPA-vacuumed then wet cleaned and transferred into the shower room for double bagging. The double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.

13. Upon completion of the abatement in roof work area, clean-up procedures shall involve removal and bagging of the following:

    a. ACRM
    b. Visible accumulations of Asbestos Containing Waste (ACW)
    c. All excess foam or similar viscous liquid
    d. All debris to be followed by a thorough wet cleaning.
    e. All tools shall be wet cleaned and HEPA-vacuumed and removed from the work area upon completion.

14. The work area shall be allowed to dry completely before the visual inspection is conducted. The inspection shall confirm the absence in the work area of:

    a. ACM or ACW bags or debris
    b. Excess foam or other viscous liquid.

15. If the work area fails visual inspection, it shall undergo another wet cleaning and/or HEPA vacuuming until it passes the visual inspection.

16. Daily continuous air sampling inside the work area and in all spaces where egress from the work area is through the structure itself, shall be conducted in accordance with sections 1-41(a), 1-41 (b) and 1-42 of Title 15, Chapter 1.

17. If any air sample(s) within the work area exceed 0.01 f/cc or the background level, whichever is greater, then work shall stop and methods altered to reduce airborne fiber concentrations to the afore-mentioned level.

18. Personal air monitoring data shall be submitted to the NYC DEP within one week after the completion of the project if requested.

8.2. Floor Tiles and Mastic Removal: shall be accomplished as described in this Specification and the NYCDEP Applicable Variance FV, "Procedures for Use of Foam or Similar Viscous Liquid in Removal of Potentially Friable Asbestos Floor Tile (VAT)"

1. The electric power and HVAC system shall be shut down and isolated.

2. All movable objects shall be removed from the work area.

3. The work area shall be sealed off with isolation barriers.

4. All penetrations in and along the floor shall be sealed.

5. Baseboards and wall surfaces up to a minimum height of four (4) feet above the floor shall be covered with a layer of 6-mil polyethylene.

6. Negative air pressure ventilation shall be provided to allow make- up air into the work area. Air outlets from the work area shall be at or near the floor level.

7. Prior to actual removal, the floor tiles and mastic shall be blanketed and wetted with a minimum 1-3 inch coating of the acceptable foam or viscous liquid that shall be maintained for the duration of the removal until the material is bagged.

8. Remove floor tile and all underlying layers using a flat hoe or scraper. Remove adhesive backing using a mastic removal solvent approved for use and compatibility by the manufacturer(s) of flooring components. Do not grind or sand floor.

9. Completely remove floor tile and adhesive backing using appropriate tools and materials. As material is removed, wrap it in two layers of plastic and place it in labeled containers for transport.

10. Completely remove all bulk mastic using an approved mastic solvent in accordance with manufacturer’s recommendation. Product application shall be in accordance with the manufacturer's instructions and the MSDS for the product. Do not allow the solvent to stand or to be

absorbed by the sub-floor. Prevent the flow of solvent under walls or into other materials and areas by placing impermeable absorbent materials specified for use by the manufacturer that act as a preventive impermeable barrier against seepage of liquid and/or vapor into unwanted areas.

11. After the completion of mastic removal, the Contractor shall thoroughly wash and clean the floor to remove any residue or fumes of mastic remover in accordance with the manufacturer's guidelines. Place the waste in sealed drums dedicated to the disposal of floor tile mastic waste. No bulk mastic residue shall remain on the floor surface following removal and cleaning. It is not necessary to remove asphaltic stain from pores of concrete.

12. Spent mastic removal agents must be properly stored, categorized and disposed.

13. Upon completion of the floor mastic removal the floor shall be smooth and free from ridges and bumps.

14. Wet all ACM with an amended water solution. Equipment used should be capable of providing a fine-sprayed mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material to the substrate but do not allow excess water to accumulate in the work area. Keep all removed material wet until it can be containerized for disposal to prevent fiber release (no more than one (1) full bag of ACM may be on the floor of the work area at any time.

8.3 Removal of Thermal System Insulation: Pipes and Fittings Insulation utilizing DEP Attachment T for Glovebag Procedures Inside Tent Enclosure:

1. All proposed work areas and contiguous space(s) shall be regulated to allow only certified asbestos workers and authorized visitors.

2. The glovebag procedures inside a tent shall comply with 15 RCNY & 1-105, 1-106 (except 15 RCNY & 1-105 c(II) and 1-106 (h) 3). The glovebag shall not be shifted or moved from the initial location.

3. If there is a breach and/or visible emissions are detected outside the glovebag or tent, work shall cease. The source of the emissions shall be properly controlled and identified in the log. The dust resulting from the fugitive emissions shall be at a minimum HEPA-vacuumed, then wet-cleaned until all evidence thereof is removed. The integrity of the glovebag/tent shall also be restored.

4. After the removal of pipe insulation, the pipe shall be sprayed with amended water and brush-scrubbed to remove all visible ACM. Prior to glovebag detachment a coat of pigmented (non-transparent)

encapsulating agent shall be applied to the pipe surface, from which ACM was removed.

5. A minimum of two (2) continuous work area air samples shall be taken outside the tent concurrently with the abatement.

6. Post-abatement clearance air monitoring shall be conducted in compliance with 15 RCNY & 1-43 (except 15 RCNY & 1-43 (b) and (c)) with a minimum of two (2) area air samples in each tent.

7. Post-abatement clearance monitoring shall be conducted in compliance with 15 RCNY & 1-43 (except 15 RCNY & 1-42 (b) and (c)) outside the tent if:

   a) The integrity of the tent was compromised and/or visible emissions were detected outside the tent.

   b) Area air samples taken outside the tent during abatement exceeded 0.01 f/cc or the background level.

8.4 Removal of Skylight Caulking/Tar and Coping Stone Tar On the Roof:

Removal of asbestos-containing tar materials from the parapet walls described in this Specification and NYCDEP Applicable Variance - Attachment IC, "Requirements For Abatement Of ACM Caulking Materials From The Top Of The Parapet Wall(s) On The Roof".

1. The work will be performed during normal work hours.

2. The entire roof is considered the work area, unless barriers are erected to identify and restrict the work area.

3. All openings on the roof and other openings/windows within 20 feet of the affected ACM shall be fully closed or sealed with one (1) layer of plastic.

4. Roof surfaces extending 5 feet on both sides and 6 feet in front, shall be covered with at least one (1) layer of 6-mil plastic, along the length of the parapet wall to be abated. The plastic layers on the roof surfaces shall extend 6 inches up the parapet wall.

5. At the base of the building, directly below the parapet wall to be abated, a restricted area shall be established. This space shall be plasticized with one (1) layer of 6-mil plastic from 6 inches up the building exterior wall to the edge of the sidewalk at least 5 feet away. It shall be cordoned off with clearly identified asbestos hazard tape. At

the end of each shift, the plastic shall be cleaned, removed, and disposed as asbestos waste.

6. The remote DES shall be constructed in accordance with Attachment D and shall be erected on the roof of the building. This unit shall be maintained in the work place for the duration of the abatement.

7. Each work area shall be supplied with appropriate tools, rags, a portable supply of amended water and a HEPA vacuum. After the ACM coping stone caulking is adequately wetted it shall be stripped using hand tools. The stripped joints shall be HEPA vacuumed and wet wiped to remove any loose debris still in place or on the polyethylene. All exposed joints shall be coated with a clear encapsulant.

8. All ACM shall be bagged directly upon detachment from the substrate.

9. One (1) area sample per shift shall be taken in the work area during removal. A minimum of three (3) samples for small projects and a minimum of five (5) samples for large asbestos project shall be collected.

10. Personnel performing the work shall be NYS/NYC certified asbestos handlers. A NYS/NYC certified asbestos handler/supervisor shall be in the work place at all times during the ACM tar abatement. The asbestos supervisor shall establish and maintain a log as required in 15 RCNY.

11. Upon completion of the stripping work, the parapet wall surfaces shall be cleaned and HEPA vacuumed to ensure no visible ACM debris in the work area. All plastic shall be removed and properly disposed of as asbestos waste.

12. All tools shall be wet cleaned then HEPA vacuumed and removed from the work area upon completion.

13. The work area shall be allowed to dry completely before the visual inspection is conducted. This inspection, to be performed by the independent third party air monitoring firm/consultant, shall confirm the absence of ACM or debris in the work area prior to the removal of the hazard tape/barriers.

8.5 Removal of Exterior Window Caulking, Exterior Door Caulking, Spandrel Flashing and Window Lintel Caulking.

Removal of ACM from windows as described in this specification and NYCDEP Applicable Variance - Attachment EC, "requirements for abatement of ACM caulking materials from Building Facades".

1. All windows and other openings within 20 feet of the affected ACM caulking shall be fully closed or otherwise sealed with two (2) layers of 6-

mil plastic. This includes openings on the same floor and also openings on immediately adjacent floors above and below where work shall be performed.

2. The inside frames of the windows and other openings within the affected adjacent interior space shall be fully plasticized with one (1) sheet of 6-mil plastic. The seal shall be airtight between the opening and the building interior.

3. Any scaffolding erected shall be constructed, maintained and operated in accordance with the applicable federal, state, and local rules and regulations.

4. At the base of the scaffolding (either upon the sidewalk tunnel or at grade level), a work place or restricted area shall be established. This space shall be plasticized with one (1) layer of 6–mil plaster from one (1) foot up the building exterior wall to the edge of the sidewalk tunnel or at least 5 feet away, whichever is greater. It shall be cordoned off with clearly identifiable asbestos hazard tape. This space (except the decon) shall be replasticized at the end of each shift.

5. The remote worker/waste DES, constructed in accordance with Attachment D, shall be erected at the base of the scaffold. This unit shall be maintained in the work area for the duration of the abatement.

6. The elevated platform shall be at least 1 foot below the surface of joint to be abated. This work area shall be plasticized with a single layer of 6-mil plastic. The plastic shall extend up from the platform to a minimum height of 2 feet on 3 sides. The plastic on the side facing the façade shall be attached directly to the building just below the surface or joint to be abated.

7. At the beginning of each shift, an area sample shall be taken on the scaffolding to obtain at least one (1) sample. Independent third parties should perform air samples.

8. If air samples taken within the building interior are below 0.01 f/cc, of the measured background level, no clearance air samples will be required.

9. Personnel performing the work shall be NYS/NYC certified asbestos handlers. A NYS/NYC certified asbestos supervisor shall be in the work place at all times during the ACM caulking abatement and shall establish and maintain a log as that term is defined at 15 RCNY 1-02.

10. Each abatement team shall be equipped with appropriate tools, rags, a portable supply of amended water and a HEPA vacuum. After the ACM caulking is adequately wetted it shall be stripped using hand tools, with the ACM caulking being directly bagged or dropped into a flexible catch basin and promptly bagged. The stripped joints shall be HEPA vacuumed and wet-wiped to remove any loose debris still in place. All exposed joints shall be coated with a transparent encapsulant.

11. Upon completion of the stripping in one location and before moving to the next, the surfaces of the immediate work area shall be rendered free of visible debris. Next, the plastic covering of the platform shall be carefully cleaned and secured at the next work area. New polyethylene shall be applied only as needed.

12. If visible emissions are noted or if the asbestos-in-air concentrations within the building exceed 0.01 f/cc or the measured background level all work shall stop. Abatement procedures shall be reevaluated. Work shall not resume until NYCDEP is notified.

8.6 Removal of Asbestos Containing Wall Plaster, Skimcoat Plaster on Columns, Pipe and Pipe Fittings Insulation, Interior Boiler Lining, Perimeter Waterproofing Tar, Electrical Wire Insulation, Electrical Panel Board, Fire Door Insulation, Transite Panel, and Ceiling Skimcoat under Full Containment Procedures

The Contractor shall use work methods and equipment that will keep the fiber count during abatement operations inside the work area to less than 0.1 fibers/cc of air when tested by NIOSH Method 7400.

1. Removal of ACM using full containment procedures (large projects).

   a. Prepare the area as described in these Specifications. Remove ACM while providing a continual mist of amended water or removal encapsulant leaving it intact. Spray asbestos materials with a fine mist of amended water or removal encapsulant, saturating materials to the substrate. Spray the asbestos material repeatedly during work process to maintain a wet condition and to minimize asbestos fiber dispersion.

   b. Remove the saturated asbestos material in small sections. As it is removed, pack the material in sealable plastic bags that shall be placed in labeled drums for transport. Remove insulation materials carefully from equipment. Do not permit them to fall to the floor.

   c. After completion of all stripping work, surfaces from which ACM have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residue. (Do not use wire brushes.)

   d. After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed then wet cleaned and transferred into the shower room for double bagging. The goose-neck and double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.

2. Upon completion of the abatement, the enclosed surfaces shall be wet cleaned by using rags, mops or sponges and be lightly encapsulated with clear encapsulant to lockdown residual asbestos.

8.7 Electric Wire Insulation, Panel Board Removal, Transite Panel Removal, Fire Door Removal, Elevator Break Pad Removal, Chimney Door Frame Caulk, Interior Fan Unit Caulking

1. Removal of ACM utilizing Modified Tent Procedures shall be conducted as follows:

   a. All tent enclosures and contiguous spaces within a radius of 10 feet shall be roped off and regulated to allow only certified workers and authorized visitors to enter.

   b. 15 RCNY § 1-141 shall be complied with except that (1) all tents shall be lined with 2 layers of plastic sheeting (6-mil thickness at a minimum), (2) the amounts of ACM that may be abated in each modified tent shall NOT EXCEED (a) 160 square feet, or (b) 260 linear feet, or © 160 combined feet (square plus linear), and (3) the total amount of ACM that may be abated at any one time in several modified tents shall NOT EXCEED 1,000 combined square feet plus linear feet.

   c. All modified tents shall be fully framed (including horizontally across the top, if applicable) with 2x3 (minimum) wood or metal studs spaced not more than 36 inch center-to-center vertically around all sides (except at the entry/exit which shall not exceed 36 inch width); and

   d. A minimum of one air volume change per 15 minutes through each modified tent shall be maintained.

   e. An airlock having at least 3 feet length between the two curtained doorways shall be constructed at the entrance to each and every tent if the decontamination unit is not attached to the tents, and

   f. If a decontamination unit is not attached to each tent, located within each airlock there shall be extra clean and uncontaminated disposable protective suits (e.g., Tyveks), and one such clean suit shall be worn by each worker in the airlock, immediately after removal of the outer suit as per 15 RCNY § 1-141(k), before each worker exits any airlock.

   g. Any decontamination unit that is not attached to a tent (i.e., that is remote from a tent) shall be constructed in compliance with the requirements of Attachment R.

   h. Decontamination units that are attached to tents shall comprise at least a shower room and a clean room, with one curtained doorway separating them, and with a second curtained doorway separating the tent from the shower room.

   I. Remove asbestos containing materials as per the Schedule. No residue shall remain after the work is completed.

j. After the ACM removal and bagging, the bagged waste shall be HEPA-vacuumed then wet cleaned and transferred into the airlock or into the shower room for double bagging, and thereafter the double-bagged waste shall be transferred outside the airlock or outside the clean room for its final transfer for storage in an enclosed waste container.

k. Upon completion of the abatement, the tent work area shall wet cleaned by using rags, mops or sponges and be lightly encapsulated with clear encapsulant to lockdown residual asbestos.

8.8 Removal: Removal of Asbestos Sash Material shall be performed in accordance with the following procedures:

1. Personal air monitoring shall be performed in compliance with OSHA standards, 29 CFR 1926.58 (f). At least two (2) of the OSHA representative personal samples collected daily per floor, must achieve a minimum volume of 560 liters.

2. A NYCDEP-certified asbestos handler supervisor shall be on-site at all times during the window sash removal process. The supervisor shall establish and maintain a project log and be responsible for any emergency situations that may occur.

3. Workers performing the work must receive OSHA awareness training and work practices training related to asbestos disturbances and handling or must have a valid NYC DEP asbestos handler certificate.

4. All windows undergoing sash removals shall be regulated to prevent unauthorized visitors and a curtained doorway shall be established at the entrance of each work area.

5. All objects must be moved at least 6 feet away from the vicinity of the windows or covered with 1 layer of 6-mil plastic.

6. Floor surfaces along the length of the window extending 1 foot on both sides and 4 feet in front, shall be covered with at least 1 layer of 6-mil plastic and shall be used as a staging area.

7. All surfaces of the window to be removed shall be HEPA vacuumed and wet wiped prior to plasticization of the sash.

8. All windows within 10 feet of the sash to be removed shall be closed.

9 All asbestos handlers shall wear two disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment, after removing street clothes in the clean room.

10. Each worker, before leaving the regulated work area shall clean the outer protective clothing by wet cleaning and/or HEPA vacuuming.

The outer disposable suit shall be removed in the regulated area and the workers shall then proceed to the remote decon placed in a centralized locations in each floor.

11. If the worker is on the inside, the lower sash shall be plasticized first on the inside pane, wrapped under the bottom of the sash and shall continue up the outer of the pane and enclosed all accessible areas. The lower window stop on the left and right of the window shall be removed in order for the contractor to tilt the window inward and allow the contractor to seal the remaining portion of the lower sash with one (1) layer of 6-mil plastic. Once the lower sash is sealed with plastic, the contractor shall disconnect all mechanical fasteners to the lower sash from the window frame.

12. After the lower sash has been removed, the upper sash shall be free of physical obstructions and maybe plasticized with one (1) layer of 6-mil plastic. After sealing the upper window sash, the window stops shall be disconnected and the remaining sash can be removed from the frame.

13. The sealed window sash shall be taken to the staging area and then completely plasticized with an additional layer of 6-mil plastic sealed with tape.

14. The plasticized lower and upper window sashes shall be labeled as asbestos containing waste and properly stored and/or presented for transportation in compliance with NYC-Sanitation regulations (16 RCNY 8).

8.9 Removal of asbestos-containing window caulking in between window frame(s) and window opening(s) utilizing tent procedures.

a. All tent enclosures and contiguous spaces within a radius of 10 feet shall be roped off and regulated to allow only certified workers and authorized visitors to enter.

b. The amounts of ACM that may be abated in each modified tent shall NOT EXCEED (a) 160 square feet, or (b) 260 linear feet, or (C) 160 combined feet (square plus linear).

c. The total amount of ACM that may be abated at any one time in several modified tents shall NOT EXCEED 1,000 combined square feet plus linear feet.

d. The remote worker and waste decontamination unit shall be constructed outside the work area, and attached to common spaces leading to individual work areas.

e. All asbestos handlers shall wear two disposable suits, including gloves, hood and footwear, and appropriate respiratory equipment, after removing street clothes in the clean room.

f. Each worker, before leaving the tent work area, shall clean the outside of the respirators and outer protecting clothing by wet cleaning and/or HEPA vacuuming. The outer disposable suit shall be removed in the work area and the workers shall then proceed to the shower room. The inner disposable suit and respirator shall be washed thoroughly before removing and prior to aggressive shower.

g. The decontamination system shall be in place for the entire duration of the abatement activities.

h. Work Area Precleaning Procedures: After establishing decontamination enclosure systems, prepare and preclean the work area as specified below:

1. Movable and loose items not removed by the Owner from work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate and shall be removed by the Contractor.

2. Movable and loose items contaminated with asbestos shall be wrapped or placed in labeled ACM bags. Sealed ACM bags shall be removed from the work areas and properly discarded as asbestos contaminated waste.

3. Fixed objects within the work area shall be precleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Joints of covers or casings shall be sealed with tape and fixed objects enclosed with a minimum of two layers of 6-mil plastic sheeting sealed airtight with tape. Disassembly of these fixed objects is not required unless otherwise noted.

4. Prior to being plasticized, the work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters, shall not be used.

i. If tent is inside of the building, install two layers of polyethylene sheeting outside and around the window frame and caulking, sealing it to form an airtight barrier between the window and caulking and the exterior of the building. If tent is outside of the building, install two layers of polyethylene sheeting inside and around the window frame and caulking, sealing it to form an airtight barrier between the window and caulking and the interior of the building.

j. All modified tents shall be fully framed (including horizontally across the top, if applicable) with 2x3 (minimum) wood or metal studs spaced not more than 36 inch center-to-center vertically around all sides (except at the entry/exit which shall not exceed 36 inch width). Tents shall be constructed to a size, which is able to effectively manage the large size of the window frame.

k. All tents shall be lined with 2 layers of plastic sheeting (6-mil thickness at a minimum).

l. A minimum of one air volume change per 15 minutes through each modified tent shall be maintained.

m. An airlock having at least 3 feet length between the two curtained doorways shall be constructed at the entrance to each and every tent.

n. Located within each airlock there shall be extra clean and uncontaminated disposable protective suits (e.g., Tyveks), and one such clean suit shall be worn by each worker in the airlock, immediately after removal of the outer suit, before each worker exits any airlock.

o. After tent enclosure successfully passes the Authority's Environmental Consultant Pre-Removal inspection, including smoke testing, the removal of the frame can commence.

p. Remove frame and bag or wrap with one layer of polyethylene and seal airtight within the tent.

q. After the ACM removal and bagging/wrapping, the bagged/wrapped waste shall be HEPA-vacuumed then wet cleaned and transferred into the airlock or into the shower room for double bagging/wrapping, and thereafter the double-bagged/wrapped waste shall be transferred outside the airlock or outside the clean room for its final transfer for storage in an enclosed waste container.

r. Contractor shall be required to apply and receive approval for variances from the following NYCDEP Asbestos Control Program regulations at a minimum to perform work in compliance with applicable regulations: Sections 1-116(m), 1-117(a), 1-118(a), 1-126(C).

9.0 General Cleaning Procedures

9.1 Visible accumulations of loose ACM shall be cleaned up as many times as deemed necessary to prevent more than one bag of ACM to accumulate at any time. This material shall be misted until such time as it can be properly cleaned. At the end of each workday care shall be taken that no asbestos containing debris is left overnight in the work area. Materials shall be

containerized using non-metallic dustpans or squeegees. HEPA vacuums shall also be utilized to clean debris. Metal shovels shall not be used in the work area to pick up or move accumulated waste material.

9.2 Visible accumulations of dust shall be cleaned of all surfaces in the work area on a daily basis. Wet wiping and/or HEPA vacuuming shall be used for this type of cleaning. The worker DES surfaces shall be cleaned according to this method each day, as appropriate, after each shift change and meal break.

9.3 Excess water accumulation shall be avoided to prevent flooding of the work area. If flooding occurs all work shall stop until the water is collected and disposed of properly.

10.0 Final Cleaning Procedures

10.1 Prior to commencement of final air clearance testing, these additional cleaning precautions shall be undertaken to insure the area is ready for clearance testing.

a) After removal of all visible accumulations of ACM, HEPA vacuuming shall be performed on all surfaces. To pick up excess water and gross saturated debris a wet-dry shop HEPA vacuum dedicated to asbestos abatement may be used.

b) All surfaces shall be wet wiped at least once.

c) Upon completion of HEPA vacuum wet wiping, the cleaned layer of surface barriers may be removed. Isolation barriers shall remain in place throughout this operation.

d) The Contractor shall vacate the area and wait a minimum of twelve (12) hours for airborne fibers to settle. At this point, all surfaces shall be cleaned again using wet methods and HEPA vacuums. When this is complete, the remaining plastic barriers shall be removed while the isolation barriers remain in position.

e) After the second cleaning, the work area shall be vacated a minimum of four (4) hours before wet cleaning and HEPA vacuuming all surfaces in the work area for a third cleaning.

f) A complete visual inspection by the on site inspector shall verify the absence of ACM (e.g. debris, dust).

g) All tools, equipment and containerized waste shall be removed from the work area.

h) After successful clearance air monitoring the isolation barriers shall be removed in conjunction with the use of a HEPA vacuum.

SECTION EIGHT: PROCEDURES FOR DISPOSAL OFACW

1.0 Disposal Activities

1.1 It is the responsibility of the Contractor to determine the applicability of current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these regulations and all appropriate U. S. Department of Transportation, EPA and other Federal, State and Local entities' regulations.

1.2 The Contractor will document transport, transfer and actual disposal of the waste at the designated landfill by completing a disposal certificate.

2.0 Maintenance of Work Place Barriers and Worker Decontamination Enclosure Systems

2.1 Following completion of the construction of all fire retardant polyethylene barriers and DES overnight settling shall be allowed to insure that barriers will remain intact and secured to walls and fixtures before beginning actual work activities.

2.2 All fire retardant polyethylene barriers inside the work place, in the worker DES, in the waste container pass-out air lock, and at partitions constructed to isolate the work area from occupied areas shall be inspected at least twice daily, including prior to the start of each day's abatement activities. Document inspections and observations in the daily project log.

3.0 Asbestos Containing Waste Requirements

3.1 The Contractor shall maintain compliance with the strictest set of regulations of U. S. EPA, Asbestos Regulations 40 CFR 61.152 and 29 CFR 1910.1200(F) of OSHA's Hazard Communication Standard, New York State Department of Conservation and other applicable standards.

Note: Any penalties incurred for failure to comply with any of the above regulations, will be the sole responsibility of the Contractor and his Sub-Contractors. The Owner(s) claims no responsibility for fines imposed due to the negligence of the Contractor.

3.2 Keep ACW separate from any other waste.

3.3 Keep ACW in a secured, enclosed and locked container.

3.4 If the Contractor has the intention of storing a quantity ACW greater than or equal to 50 cubic yards, the Contractor shall submit a written request and receive written approval from the Owner(s).

3.5 Prior to transport the Contractor shall:

a. Ensure that ACW has been sufficiently wet down.

b. Examine the integrity of the container's airtight seals.

c. Re-wet and re-package any damaged containers.
Ensure that the person transporting asbestos waste holds a valid permit issued pursuant to New York State regulations.

3.6 Transport of ACW

a. Ensure that the ACW has been sufficiently wet down in a leak tight container.

b. Examine the integrity of the container's leak tight seal at a minimum of once per 24-hour period.

c. Re-wet and re-package any damaged containers.

d. Maintain at storage site an adequate supply of spare leak tight containers.

e. Maintain at storage site an adequate supply of amended water.

f. Keep ACW separate from any other waste.

g. Keep ACW in a secured, enclosed and locked container.

3.7 The Contractor or Sub-Contractor at the time of presenting for disposal of ACW shall comply with all applicable NYC DEP and NYS-DOL regulations issued pursuant to asbestos disposal.

3.8 For storage in the generation site:

a. Wet down all ACM waste in a manner sufficient to prevent all visible emissions of dust into the air.

b. Seal material in a leak tight container while wet and plasticize the storage area and utilizing negative air filtration.

c. Keep ACW separate from any other waste.

3.9 ACW storage away from the site of generation, the Contractor shall:

a. Ensure that the ACW has been properly packaged as per requirements above.

b. Examine the containers of ACW to ensure that there are no breaks in the containers and that no visible dust is being released into the air.

c. Examine the containers in a manner reasonably calculated to minimize disturbance and damage to the containers.

d. Should examination reveal damage to a container of ACW the Contractor or person accepting the waste shall immediately wet down the ACW and re-package it into clean leak tight containers. The repackaging shall be conducted in a place and manner to minimize potential exposure to the general public. The subsequent repackaging shall be the financial responsibility of the Contractor and occur at no extra cost to the Owner(s).

3.10 ACW Disposal:

a. The Contractor shall transport all sealed asbestos containing waste (ACW) to a landfill site approved by the New York State Department of Environmental Conservation (NYS-DEC). Transportation shall be performed by a NYS-DEC registered waste-hauler.

b. The Contractor shall be responsible for maintaining all sealed containers during the processing of bags (i.e. handling, loading, transporting, unloading).

c. At the completion of the project the Contractor shall provide a manifest or dump ticket duly executed by the Contractor, the transporter, and the disposal facility. The manifest shall be all-inclusive, describing the volume of materials, dates of transport and date of disposal. A dump ticket shall be produced for each load.

d. The dumpster that is to receive asbestos material and other refuse from the contaminated area may be located adjacent to the exterior door as selected by the Contractor and approved by the Owner(s).

e. The dumpster is to be of the totally closeable type and is to be kept closed and locked to prevent vandalism. It shall be utilized only for refuse from the asbestos removal area.

f. Disposal shall be at an approved landfill, transfer at a licensed transfer station and a manifest form will be signed by the landfill owner documenting receipt and acceptance of the ACW.

SECTION NINE: AIR MONITORING, TESTING, AND INSPECTIONS

1.0 Inspection and Testing

1.1 Air sample collection, final clearance inspections and monitoring of the Contractor's work practices shall be conducted by a certified New York State Project Monitor.

1.2 Air sample analysis shall be conducted by individuals possessing the following professional qualifications:

a. Proficiency (P) Rating in the NIOSH Proficiency in Analytical Testing Program (PAT).

b. Accreditation by the State of New York Environmental Laboratory Approval Program (ELAP).

c. The analysis staff shall be independent of all parties involved in the asbestos project.

2.0 Personal (OSHA) Monitoring

2.1 At the end of the project the Contractor shall provide complete documentation of the OSHA required monitoring of on-site personnel that was conducted during the abatement activities. This information will document the worker exposure on this particular project.

3.0 Monitoring Requirements

3.1 Prior to the commencement of large project abatement activities the work area shall be pre-tested to determine ambient airborne asbestos levels. A minimum of five (5) inside the work area and five (5) outside the work area samples shall be collected throughout the proposed work area during normal occupancy activities and circumstances.

3.2 The following conditions shall determine the minimum number of air samples to be collected on a daily basis at the large project work site:

a) Four (4) samples within ten (10) feet of isolation barriers.

b) One (1) sample at the exhaust of each air filtration device (microtrap) exhausting indoors on the project.

c) Two (2) samples inside the uncontaminated entrances of each worker and waste decontamination unit.

d) Two (2) samples in adjacent non-work areas. If no such areas exist, an exterior sample (outside the building) shall be taken.

e) It is also highly recommended that exterior samples be taken to document outside air fiber levels if conditions permit.

f) Minimum volume required to be drawn on area samples is 560 liters. This minimum requirement may be altered if required, by filing for a variance with the NYC DEP. This should be done in the event of high concentrations of particulates, other than asbestos, in the air.

3.3 The indoor air samples taken on a work site shall be considered representative of the building occupants breathing zone.

3.4 Personal air sample results shall be considered representative of the workers inside the work area containment.

3.5 Air sampling equipment shall not be placed in corners or near any obstructions such as furniture or air handling systems that may unduly affect airflow.

3.6 All samples shall have a chain of custody to record who collected, transported, received and analyzed samples.

3.7 Air sample analysis shall be carried out in accordance the NIOSH 7400 Method (Revised) utilizing counting Method "A".

3.8 All applicable requirements for quality assurance and quality control in the laboratory must be in place in order to ensure the accuracy of the analysis results.

4.0 Final Clearance Air Monitoring

4.1 Sampling should commence a minimum of one (1) hour after the area is completely dry. No visible pools of water or condensation shall be present during final air clearance testing.

4.2 A minimum of five (5) samples inside and five (5) samples outside of each work area shall be collected. Samples shall be collected in a random fashion inside the work area. The equipment shall be placed so as to obtain a representative sample of the entire work area.

4.3 Samples collected outside the work area, but within the building, shall also be placed in a manner to get the best possible representation of outside air. Placing the samples at a distance of at least fifty (50) feet from all barriers will insure that any air that may escape from the isolation barriers will not affect these samples.

4.4 Aggressive sampling procedures shall be used within the work area for any and all clearance monitoring. Forced air equipment and fans shall be utilized for this purpose. Prior to starting sampling equipment, forced air equipment shall be used to direct exhaust air against all exposed surfaces of the work area. After running the forced air equipment a minimum of five (5) minutes per 1,000 square feet of area involved, use continuous air movement devices (electrical fans) to continue air movement throughout the area. Twenty (20inch) inch fans shall be used at the rate of one fan per 10,000 cubic feet of room space. The fan(s) shall be placed on a slow speed and pointed at the ceiling.

4.5 Final air clearance samples shall require the collection of a minimum volume of 1,800 liters.

4.6 Any homogenous work area that does not meet the clearance criteria of 0.01 fibers per cubic centimeter (f/cc) shall be thoroughly re-cleaned using wet methods, with negative pressure ventilation systems in operation. Upon

completing new samples shall be collected in the manner prescribed above. This process shall be repeated until the work site passes the test.

4.7 The release criterion shall be applied to each work area independently.

5.0 Certificate of Completion

5.1 This shall be delivered by the Certified Asbestos Investigator who shall deems that all visible ACM has been removed from the work area in question. The form shall be issued after all punch lists are fulfilled and work is deemed completed by the on-site inspector.

SECTION TEN: ASBESTOS QUANTITY SCHEDULES

The following table lists all exposed ACM determined to be present in the subject area:

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
Basement	Boiler Room	Chimney Access Door Frame Caulk	ACM	1 Door/ 20 LF	Confirmed ACM
	Boiler Room	Interior Boiler Lining	Assumed ACM	800 SF	Boiler 2 interior
	Pump room	Perimeter Water Proof Tar	ACM	35 SF	Confirmed ACM
2nd Floor	At Column D5	3"x5" Corrugated Pipe Insulation	ACM	16 LF	East side
4th Floor	Entire	Floor Mastic	ACM	1,000 SF	North area
5th Floor	Entire	2"x4" Corrugated Pipe Insulation	ACM	15 LF	Confirmed ACM
6th Floor	Entire	2"X4" Pipe Insulation	ACM	120 LF	Confirmed ACM including stairwell landing
		Elbow Insulation	ACM	3 SF	
7th Floor	Entire	9x9 Floor Tile Green	ACM	1,600 SF	Remove all layers to substrate at North Side
	Entire	9x9 Gray Tile	ACM		
		Mastic to Gray 9x9	ACM		
8th Floor	South Side	9x9 Floor Tiles	ACM	3,000 SF	
8th Floor	Entire Floor	12x12 1st Layer	ACM	1,500 SF	Remove all layers to concrete deck
		Mastic 1st Layer			
		12X12 F.T. 2nd Layer			
		Mastic to 2nd Layer			
		9x9 F.T. 3rd Layer			
		Mastic 3rd Layer			
9th Floor	Entire Floor	9x9 Floor Tiles	ACM	8,000 SF	Remove floor tiles & mastic
		Mastic to 9x9			

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
10th Floor	Entire	12x12 Floor Tiles	Assumed ACM	500 SF	Confirmed ACM
		Mastic to 12x12	ACM		
		9x9 Floor Tile	ACM	8,000 SF	Confirmed ACM
11th Floor	North Side	Pipe Insulation	ACM	4 LF	North side
	North Side	9X9 Floor Tiles	ACM	600 SF	Confirmed ACM
12th Floor	Entire floor	9x9 Floor Tiles	ACM	2,000 SF	Confirmed ACM
	Near Elevator	4x6 Elbow	ACM	6 SF	Confirmed ACM
		Solid Lag Pipe Insulation	ACM	10 LF	
		Corrugated Pipe Insulation on 2” O.D. Pipe	ACM	20 LF	
Ground Fl.	Entire	Ceiling Skim Coat	ACM	5,000 SF	Entire Floor
2nd Floor	Stairwell #2	Perimeter Flashing	ACM	50 SF	Rear Landing
5th Floor–	South East Corner Office	Carpet Mastic	Assumed ACM	200 SF	Remove carpet, and underlying flooring
		Floor Leveling Cement/Linoleum	ACM		
6th Floor	Bathroom	Corrugated Pipe Insulation	ACM	15 LF	In North Bathroom
	NE Area	12x12 Floor Tile	ACM	200 SF	Confirmed ACM at
	Entire	12x12 Floor Tiles Top Layer	Assumed ACM	2,500 SF	Remove ACM floor tiles and mastic
		12x12 Floor Tiles Mastic	Assumed ACM		
		9x9 Floor Tiles Top Layer	ACM		
	Windows	Interior Fan Unit Caulking	ACM	80 LF	Remove at old factory windows

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
7th Floor	Entire	Wall Plaster White Coat	ACM	5,000 SF	Wall plaster was confirmed ACM at 7th Floor
	Entire	Wall Plaster Brown Coat	ACM		
	Entire	Skim Coat Plaster on Columns	ACM	2,500 SF	
Main Roof	Entire Roof	Roof Membrane Top	ACM	4,500 SF	Confirmed ACM At Main Roof
		Perimeter Flashing Tar	ACM	1,200 SF	
		Tar Paper Over Ply Wood	ACM	684 SF	
Bulkheads	Bulkhead Exterior Elevations	Bulkhead Exterior Door Caulking	ACM	80 LF/ 6 Doors	Confirmed ACM At Bulkheads
		Bulkhead Flashing Tar	ACM	200 SF	
		Exterior Window Caulking	ACM	220 LF	
		Bulkhead Tar	ACM	6,000 SF	
Water Tower Bulkhead Roof	Entire Roof	Roofing Membrane	ACM	800 SF	Confirmed ACM at Water Tower Bulkhead
		Perimeter Flashing	ACM	120 SF	
		Pitch Pocket Tar	ACM	20 SF	
Elevator Machine Room	Bulkhead Roof	Perimeter Flashing & Pitch Pocket	ACM	150 SF	Confirmed ACM
Fan Room	Bulkhead Roof	Roof Membrane	ACM	100 SF	
		Perimeter Flashing	ACM	50 SF	
Tank Room	Under Water Tower Roof	Corrugated Insulation 2” O.D. Pipe	ACM	150 LF	Confirmed ACM-poor condition
		Pipe Fitting Insulation to 2” O.D. Pipe	ACM	20 SF	

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
Basement	Elevator Shafts	Elevator Break Pads	Assumed ACM	120 SF	Assumed ACM
Basement	Electrical Room	Electrical Panel Board	Assumed ACM	1,000 SF	Assumed ACM
Roof	Elevator Bulkhead	Electrical Panel Board	Assumed ACM	500 SF	Machine Room
Ground Floor	Exterior Façade	Window Lintel Caulking	Confirmed ACM	17 MO/ 400 LF	Confirmed ACM at all lintels – please refer to Attachment B for actual dimension and number of window bays
2nd Floor	" "	" "	" "	17 MO/ 400 LF	
3rd Floor	" "	" "	" "	17 MO/ 400 LF	
4th Floor	" "	" "	" "	17 MO/ 400 LF	
5th Floor	" "	" "	" "	17 MO/ 400 LF	
6th Floor	" "	" "	" "	17 MO/ 400 LF	
7th Floor	" "	" "	" "	17 MO/ 400 LF	
8th Floor	" "	" "	" "	17 MO/ 400 LF	
9th Floor	" "	" "	" "	29 MO/ 720 LF	
10th Floor	" "	" "	" "	28 MO/ 720 LF	
11th Floor	" "	" "	" "	28 MO/ 720 LF	
12th Floor	" "	" "	" "	30 MO/ 750 LF	
Ground Floor	Exterior Façade	Old Window Frame Caulk Steel Casement Windows	Confirmed ACM	8 MO/ 360 LF	Confirmed ACM under Aluminum Frames at North and South Elevations – please refer to Attachment B for actual dimensions and number of window bays
2nd Floor	" "		" "	8 MO/ 360 LF	
3rd Floor	" "		" "	8 MO/ 360 LF	
4th Floor	" "	" "	" "	8 MO/ 360 LF	
5th Floor	" "	" "	" "	8 MO/ 360 LF	
6th Floor	" "	" "	" "	8 MO/ 360 LF	
7th Floor	" "	" "	" "	8 MO/ 360 LF	
8th Floor	" "	" "	" "	8 MO/ 360 LF	
9th Floor	" "	" "	" "	14 MO/ 510 LF	
10th Floor	" "	" "	" "	13 MO/ 500 LF	
11th Floor	" "	" "	" "	14 MO/ 510 LF	
12th Floor	" "	" "	" "	15 MO/ 460 LF	

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
Ground Floor	Exterior Façade	Exterior Caulking	Confirmed ACM	9 MO/ 330 LF	Confirmed ACM at all old factory windows – please refer to Attachment B for actual dimensions and number of window bays
2nd Floor	" "	" "	" "	9 MO/ 330 LF	
3rd Floor	" "	" "	" "	9 MO/ 330 LF	
4th Floor	" "	" "	" "	9 MO/ 330 LF	
5th Floor	" "	" "	" "	9 MO/ 330 LF	
6th Floor	" "	" "	" "	9 MO/ 330 LF	
7th Floor	" "	" "	" "	9 MO/ 330 LF	
8th Floor	" "	" "	" "	9 MO/ 330 LF	
9th Floor	" "	" "	" "	15 MO/ 800 LF	
10th Floor	" "	" "	" "	15 MO/ 750 LF	
11th Floor	" "	" "	" "	14 MO/ 766 LF	
12th Floor	" "	" "	" "	15 MO/ 800 LF	
Ground Floor	Exterior Facade	Exterior/Interior Putty	Confirmed ACM	9 MO/ 2,250 LF	Confirmed ACM at all old factory windows – please refer to Attachment B for dimensions and number of window bays
2nd Floor	" "	" "	" "	9 MO/ 2,250 LF	
3rd Floor	" "	" "	" "	9 MO/ 2,250 LF	
4th Floor	" "	" "	" "	9 MO/ 2,250 LF	
5th Floor	" "	" "	" "	9 MO/ 2,250 LF	
6th Floor	" "	" "	" "	9 MO/ 2,250 LF	
7th Floor	" "	" "	" "	9 MO/ 2,250 LF	
8th Floor	" "	" "	" "	9 MO/ 2,250 LF	
9th Floor	" "	" "	" "	15 MO/ 4,050 LF	
10th Floor	" "	" "	" "	15 MO/ 3,750 LF	
11th Floor	" "	" "	" "	14 MO/ 3,750 LF	
12th Floor	" "	" "	" "	15 MO/ 4,050 LF	

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
Ground Floor	Pipe Chase Near North Bathroom	Pipe Insulation on Risers	ACM	50 LF	Contractor demolish walls in controlled fashion, pipe insulation was observed to be in poor condition
2nd Floor	" "	" "	" "	50 LF	
3rd Floor	" "	" "	" "	50 LF	
4th Floor	" "	" "	" "	50 LF	
5th Floor	" "	" "	" "	50 LF	
6th Floor	" "	" "	" "	50 LF	
7th Floor	" "	" "	" "	50 LF	
8th Floor	" "	" "	" "	50 LF	
9th Floor	" "	" "	" "	50 LF	
10th Floor	" "	" "	" "	50 LF	
11th Floor	" "	" "	" "	50 LF	
12th Floor	" "	" "	" "	50 LF	
Basement	Boiler Room	Electrical Wire Insulation	Assumed ACM	100 LF	Assumed ACM in Basement
	Sump Pump Room	" "	" "	50 LF	
	Electrical Room	" "	" "	2,000 LF	
Ground Floor	Electrical Closet	" "Electrical Wire Insulation	" "	50 LF	Assumed ACM at Electrical Closet on each floor near elevators
2nd Floor	" "	" "	" "	50 LF	
3rd Floor	" "	" "	" "	50 LF	
4th Floor	" "	" "	" "	50 LF	
5th Floor	" "	" "	" "	50 LF	
6th Floor	" "	" "	" "	50 LF	
7th Floor	" "	" "	" "	50 LF	
8th Floor	" "	" "	" "	50 LF	
9th Floor	" "	" "	" "	50 LF	

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
10th Floor	Electrical Closet	Electrical Wire Insulation	Assumed ACM	50 LF	Assumed ACM
11th Floor	" "	" "	" "	50 LF	
12th Floor	" "	" "	" "	50 LF	
Bulkhead	Elev. Machine Rm.	" "	" "	1,500 LF	
Basement	SE Corner Room	Pipe & Fittings Insulation	Confirmed ACM	50 LF	Remove pipe & pipe fittings insulation. Contractor to demolish pipe chase in sump pump room plenum
	Large Room at SE	" "	" "	400 LF	
	Electrical Room	" "	" "	400 LF	
	Telephone Room	" "	" "	30 LF	
	Sump Pump Room	" "	" "	60 LF	
	Stair # 2 Landing	" "	" "	25 LF	
	North Center Room	" "	" "	300 LF	
	Hallway	" "	" "	400 LF	
	NE Duct Room	" "	" "	300 LF	
10th Floor – Terraces	North Terrace	Roof Membrane	Assumed ACM	1,280 SF	Assumed ACM Remove with ACM flashing seam tar and perimeter flashing tar at all Terraces
	South Terrace	" "	" "	1,280 SF	
11th Floor-Terraces	North West Terrace	Roof Membrane	Assumed ACM	120 SF	
	North East Terrace	" "	" "	120 SF	
	South East Terrace	" "	" "	120 SF	
	South West Terrace	" "	" "	120 SF	
12th Floor-Terraces	North West Terrace	Roof Membrane	Assumed ACM	200 SF	
	North East Terrace	" "	" "	100 SF	
	South East Terrace	" "	" "	100 SF	
	South West Terrace	" "	" "	100 SF	

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
10th Floor-Terraces	North Terrace	Perimeter Flashing Tar	Confirmed ACM	280 LF	Confirmed ACM
	South Terrace			280 LF	
11th Floor-Terraces	North West Terrace	Perimeter Flashing Tar	Confirmed ACM	40 SF	Confirmed ACM
	North East Terrace	" "	" "	40 SF	
	South East Terrace	" "	" "	40 SF	
	South West Terrace	" "	" "	40 SF	
12th Floor-Terraces	North West Terrace	Perimeter Flashing Tar	Confirmed ACM	80 SF	Confirmed ACM
	North East Terrace	" "	" "	40 SF	
	South East Terrace	" "	" "	40 SF	
	South West Terrace	" "	" "	40 SF	
10th Floor – Terraces	North Terrace	Coping Stone Tar	Confirmed ACM	300 LF	Confirmed ACM
	South Terrace			300 LF	
11th Floor-Terraces	North West Terrace	Coping Stone Tar	Confirmed ACM	80 LF	Confirmed ACM
	North East Terrace	" "	" "	80 LF	
	South East Terrace	" "	" "	80 LF	
	South West Terrace	" "	" "	80 LF	
12th Floor-Terraces	North West Terrace	Coping Stone Tar	Confirmed ACM	120 LF	Confirmed ACM
	North East Terrace	" "	" "	80 LF	
	South East Terrace	" "	" "	80 LF	
	South West Terrace	" "	" "	80 LF	
Roof	Stairwell Bulkhead	Skylight Caulking/Tar	Assumed ACM	Stairwell 1: 80 SF	Assumed ACM
		" "	" "	Stairwell 2: 80 SF	
G-12 Floors	Exterior Façade	Spandrel Flashing	Assumed ACM	TBD	Assumed ACM- Please refer to Attachment B for quantities at each elevation

LOCATION		ACM TYPE	LAB RESULTS	ACM QUANTITY	NOTES
FLOOR	AREA				
Ground Floor	Electrical Closet	Transite Panels on Doors and Walls	Assumed ACM	120 SF	Assumed ACM
2nd Floor	" "	" "	" "	120 SF	
3rd Floor	" "	" "	" "	120 SF	
4th Floor	" "	" "	" "	120 SF	
5th Floor	" "	" "	" "	120 SF	
6th Floor	" "	" "	" "	120 SF	
7th Floor	" "	" "	" "	120 SF	
8th Floor	" "	" "	" "	120 SF	
9th Floor	" "	" "	" "	120 SF	
10th Floor	" "	" "	" "	120 SF	
11th Floor	" "	" "	" "	120 SF	
12th Floor	" "	" "	" "	120 SF	
Ground Floor	Freight Elevator Door	Door Insulation	Assumed ACM	100 SF	Assumed ACM
2nd Floor	" "	" "	" "	100 SF	
3rd Floor	" "	" "	" "	100 SF	
4th Floor	" "	" "	" "	100 SF	
5th Floor	" "	" "	" "	100 SF	
6th Floor	" "	" "	" "	100 SF	
7th Floor	" "	" "	" "	100 SF	
8th Floor	" "	" "	" "	100 SF	
9th Floor	" "	" "	" "	100 SF	
10th Floor	" "	" "	" "	100 SF	
11th Floor	" "	" "	" "	100 SF	
12th Floor	" "	" "	" "	100 SF	