March 5, 2012

Addendum No. 2

Brooklyn College – TV Center Control Room Renovation
Project No: BY019/020-010

This Addendum is issued for the purpose of conveying the Amendment and Questions & Answers, below, and is hereby made part of said Bid to the same extent as though it were originally included therein.

AMENDMENT

Bidders shall replace SECTION 02080 – ASBESTOS REMOVAL AND DISPOSAL with the enclosed REVISION TWO 3/5/2012 SECTION 02080 – ASBESTOS REMOVAL AND DISPOSAL.

QUESTIONS and ANSWERS

Question 1 Would Brooklyn College request separate bids for third party Air Sampling/Project Monitoring associated with asbestos abatement at the TV Center Control Room? If yes, would this solicitation be on line? When can it be expected?

Answer 1 No, there are no separate bids for the Air Sampling/Project Monitoring. The work will be contracted directly by CUNY.

This Addendum is issued pursuant to Standard form of Agreement, Article 1 & Invitation to Bid form. Bidders are asked to acknowledge receipt of this Addendum by returning it signed, below, with their submitted Bid. Failure to do so shall be considered grounds for rejection of your Bid.
By signing in the space provided below, the Bidder acknowledges receipt of this Addendum No. 2.

This Addendum must be signed by the Bidder and submitted with the Bid.

Name of Bidder

Name of Authorized Bidder
Representative

Title

Signature

Date
PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Requirements and other Division 01 Specification Sections, apply to this Section

1.02 WORK INCLUDED

B. The Contractor shall furnish all labor, materials, services, insurance, patents, and equipment necessary to perform the Work of this Contract. Contractor is responsible for NYC, NYS, and EPA filing and filing fees. All asbestos material is to be disposed of as ACM waste. All work will be conducted in compliance with EPA, OSHA, NYS and NYC regulations, any other applicable federal, state, and local regulations and in accordance with these specifications, the Contract Documents and a site-specific variance (if required). In the event there is a conflicting point between these provisions, the most stringent one shall apply.

C. The work will involve the removal of all Asbestos Containing and Asbestos Contaminated Materials and all Asbestos Waste from within the Work Zones in accordance with all applicable rules and regulations and this specification. The Contractor shall be responsible for establishing exact quantities and locations. The project will take place at Brooklyn College, Whitehall TV Center, 2900 Bedford Avenue, New York, 11210.

D. All removals shall be performed in accordance with New York City Title 15 and using the procedures that are required and appropriate for each type ACM material to be removed in accordance to applicable rules, regulations and this specification.

The project shall be conducted as follows:

Phase I- MECHANICAL ELECTRICAL STORAGE ROOM- FIRST FLOOR

This section of the project involves the removal and disposal of All Asbestos Containing Floor Tile and Mastic (total estimated quantity 150 Square Feet) and the removal and disposal of All Wall Panel Glue (total estimated quantity 100 square feet) from the First Floor Mechanical Electrical Room Storage Room, as described in the Technical Specifications and shown on the Drawings.

Phase II- TV CENTER, BASEMENT

This section of the project involves the removal and disposal of All Asbestos Containing Pipe Insulation (total estimated quantity 50 linear feet), All 9” x 9” floor tile and associated mastic, (total estimated quantity 500 square feet), All Black Wall Mastic (total estimated quantity 750 square feet) and All Covebase Glue (total estimated quantity 100 square feet), as described in the Technical Specifications and shown on the Drawings. The project also includes the re-insulation of the abated pipes in accordance with the latest NYS Energy Code. Insulation material, its installation means and method shall be submitted to the Architect for review and approval.

NOTES:
1) All scaffolding designs, if required, must be signed/sealed by a license professional engineer licensed in the state of New York and must be submitted to the Owner for approval prior to any work.

2) The abatement areas shown on the drawings are provided for guidance only and no claims are made as to their accuracy. The Contractor is alone responsible for determining the actual abatement quantities.

3) In the event that clearance samples do not pass, the Asbestos Abatement Contractor will be responsible for all costs associated with re-sampling.

4) The Contractor is responsible for using Air Filtration Units equipment that has 99.99% filtering capabilities and must be capable to utilize charcoal filtration to eliminate the odor from mastic removal.

5) The Contractor is responsible to install filters and seal all HVAC and exhaust ducts in the work area to prevent any dirt and dust migration into HVAC systems.

6) The Contractor is responsible for using "standard of care" when applying or removing tape, spray adhesive or any other type of bonding material from the walls, floors, ceilings and any other building surfaces. If damage is sustained to an area during the work procedure directly related to the negligence of the contractor then that Contractor is responsible for returning the area back to its original condition.

7) The Contractor shall furnish all labor, materials, services, insurance, patents, and equipment necessary to carry out the removal operation. All work will be conducted in compliance with EPA, OSHA, NYC and NYS regulations, and any other applicable federal, state, and local regulations and in accordance with these specifications. In the event there is a conflicting point between these provisions, the most stringent one shall apply.

1.03 DEFINITIONS

A. ABATEMENT: Procedures to control fiber release from Asbestos-Containing Materials. This includes encapsulation, enclosure, and removal.

B. AIRLOCK: A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two Curtained Doorways at least 3 feet apart.

C. AIR MONITORING: The process of measuring the fiber content of a specific volume of air in a stated period of time.

D. AREA MONITORING: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers in the breathing zone.

E. AMENDED WATER: Water containing a wetting agent or surfactant.

F. ASBESTOS: Any hydrated mineral silicate separable into commercially usable fibers, including but not limited to chrysotile (serpentine), amosite (cumington-grunerite), crocidolite (riebeckite), tremolite, anthophyllite, and actinolite.

G. ASBESTOS CONTAINING MATERIAL (ACM): Any Asbestos or any material containing more than one percent of Asbestos by weight or area.
H. **ASBESTOS CONTAMINATED OBJECTS:** Any object which has been contaminated by Asbestos or Asbestos Containing Material. This shall include all unprotected porous materials in an Asbestos Work Area.

I. **ASBESTOS CONTROL AREA:** An area where Asbestos Abatement operations are performed, which is isolated by physical boundaries to prevent the spread of asbestos dust, fibers, or debris.

J. **ASBESTOS WASTE:** Any Asbestos Containing Material or Asbestos Contaminated Objects requiring disposal.

K. **AUTHORIZED VISITOR:** The Owner, Owner’s Air Monitoring Consultant, or a representative of any regulatory or other agency having jurisdiction over the project.

L. **CLEAN ROOM:** An uncontaminated area or room which is part of the Worker Decontamination Enclosure System, with provisions for storage of workers’ street clothes and protective equipment.

M. **COMPETENT PERSON:** One who is capable of identifying existing asbestos hazards in the workplace and who has the authority to take prompt corrective measures to eliminate them as specified in 29 CFR 1926.32(f); Reference 29 CFR 1926.1101(b) for duties and responsibilities.

N. **CRITICAL BARRIER:** Any windows, HVAC diffusers (exhaust or return), pipe sleeves, penetrations, doorways or any other openings leading to an occupied area of the building or to the outside.

O. **CURTAINED DOORWAY:** A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed of three overlapping sheets of fire-retardant plastic over an existing or temporary door frame. Attach a weight to each sheet and seal at alternating edges so as to produce a zigzag pattern of entrance or exit.

P. **ENCAPSULANT:** A liquid material which can be applied to Asbestos-Containing Material and which controls the possible release of Asbestos fibers from the Asbestos Containing Material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). This may also be used to seal surfaces from which asbestos containing materials have been removed.

Q. **ENCAPSULATION:** All herein specified procedures necessary to coat materials with an encapsulant to control the possible release of Asbestos fibers into the ambient air.

R. **ENCLOSURE:** All herein specified procedures necessary to complete enclosure of Asbestos Containing Materials behind an airtight and impermeable barrier.

S. **EQUIPMENT ROOM:** A contaminated area or room which is part of the Worker Decontamination Enclosure System, with provisions for the storage of contaminated clothing and equipment.

T. **FIXED OBJECT:** A unit of equipment or furniture in the Work Zone which cannot be removed from the Work Zone.

U. **FRIABLE ASBESTOS MATERIAL:** An Asbestos Containing Material that can be crumbled, pulverized, or reduced to powder when dry, by hand pressure or will crumble, be pulverized or produce powder when subjected to specific mechanical operation.
V. **HEPA FILTER:** A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 micrometers in diameter.

W. **HEPA VACUUM EQUIPMENT:** High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be of 99.97% efficiency for retaining fibers of 0.3 micrometers or larger.

X. **HOLDING AREA:** A chamber between the Washroom and an uncontaminated area in the Waste Decontamination Enclosure System. The Holding Area comprises an airlock.

Y. **MOVABLE OBJECT:** A unit of equipment or furniture in the Work Zone which can be removed from the Work Zone.

Z. **NEGATIVE PRESSURE SYSTEM:** A local exhaust system equipped with HEPA filtration that is capable of maintaining a minimum pressure differential of minus (-0.02) inch of water column relative to adjacent unsealed areas.

AA. **NONFRIABLE ASBESTOS MATERIAL:** An Asbestos Containing Material in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the Asbestos is well bound and that when dry cannot be crumbled, pulverized or reduced to powder by hand pressure and will not be subject to mechanical operations.

BB. **PERSONNEL DECONTAMINATION ENCLOSURE SYSTEM:** A Decontamination Enclosure System for Workers, typically consisting of an Airlock, an Equipment Room, a second Airlock, a Shower room, a third Airlock, and a Clean Room.

CC. **PERSONAL MONITORING:** Sampling of airborne asbestos fiber concentrations within the breathing zone of an employee.

DD. **REMOVAL:** All herein specified procedures necessary to strip all Asbestos Containing Materials from the designated areas.

EE. **SHOWER ROOM:** A room between the Clean Room and the Equipment Room in the Worker Decontamination Enclosure System, with hot and cold running water and suitably arranged for complete showering during decontamination. The Shower Room comprises an airlock between the Equipment Room and the Clean Room.

FF. **SURFACTANT:** A chemical wetting agent added to water to improve penetration of water into the Asbestos Containing Materials.

GG. **TIME WEIGHTED AVERAGE (TWA):** An 8-hour time weighted average of airborne fiber concentration per cubic centimeter of air. Three samples are required to establish the 8-hour time weighted average.

HH. **WASHROOM:** A room between the Work Zone and the Holding Area in the Waste Decontamination Enclosure System. The Washroom comprises an airlock.

II. **WET CLEANING:** The process of eliminating Asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as Asbestos Waste.

JJ. **WORK SITE:** Premises where Asbestos Abatement is taking place. The Work Site includes, but is not limited to the Work Zone, the Personnel and Waste Decontamination Systems, the staging area, the disposal route and the loading dock.
ASBESTOS REMOVAL AND DISPOSAL

KK. WORK ZONE: Any area indicated on the Drawings as Asbestos Abatement areas or as areas with Asbestos Containing Material.

1.04 SUBMITTALS

A. Submit the following items to the Architect and Owner’s Air Mentoring Consultant for review fifteen (15) days prior to the commencement of Work associated with this section:

1. Pipe insulation
2. EPA NESHAP Notification
3. New York State Department of Labor Notification: The form required by the State of New York Asbestos Control Program in accordance with Article 30 of the New York State Labor Law.
4. New York City Asbestos Control Program Notification: The form required by the New York City Department of Environmental Protection Asbestos Control Program in accordance with Chapter 1 of Title 15 of the Rules of the City of New York Governing the Asbestos Control Program
5. Any proposed variance to any of the applicable regulations.
6. Work Place Safety Plan (WPSP) and any other applicable construction documents, which shall be prepared by registered design professional.

Upon return of submittals from the Owner’s Air Mentoring Consultant dictating that the submissions have been reviewed and comply with the contract documents, file all notifications with the appropriate agencies in accordance with all applicable regulations and these specifications. Pay the appropriate fees. All filing fees and associated costs shall be borne by the Contractor.

B. Submit the following items to the Owner’s Air Mentoring Consultant two (2) days prior to the commencement of Work associated with this section. No Work shall begin until ALL submittals are returned with an action stamp indicating that the submission is in accordance with these specifications.

1. NOTIFICATIONS: Stamped received copies of the notifications and variances listed above in item A, as well as copies of the canceled checks used to pay all associated fees.
2. CONTRACTOR’S CERTIFICATION: Documentation confirming licensing by New York State Commission of Labor for asbestos Work in accordance with Industrial Code Rule 56.
3. WORKER LICENSING: Copies of the AHERA certificates, New York State Department of Labor Asbestos Handling Certificates and New York City Department of Environmental Protection Licenses for all employees performing the Work of this Section.
4. EMPLOYEE RELEASE FORM: Prior to allowing an employee to perform any Work on the project, submit the properly executed Employee Release Form for each employee. A copy of this form is included herein.
5. CONTINGENCY PLANS: A copy of emergency, security, and contingency plans as follows:
a. A plan to provide for emergency and fire evacuation of personnel from the Work Zone in an emergency. File a copy of this plan with the local fire and/or ambulance unit;

b. A plan for maintaining the security of the Work Zone. The security plan shall provide a means of preventing accidental or unauthorized entry. Provide security to the decontamination facility and all points of potential access to the Work Zone 24 hours per day during abatement. Submit the form of security and safety log which will be maintained on the project;

c. A contingency plan addressing emergencies, equipment failures, and barrier failure. Include the telephone numbers of at least three (3) responsible persons who shall be in the position to dispatch men and equipment to the project in the event of an emergency.

6. LANDFILL: Written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the New York City Department of Sanitation and the New York State Department of Environmental Conservation. In the event the landfill is not located in New York State, approval from the agency having jurisdiction over the landfill must be received. Documentation that the proposed hauler and landfill have the proper permits and are willing to accept the asbestos waste.

7. MATERIAL SAFETY DATA SHEETS: For all products intended to be used on the project, a Materials Safety Data Sheet in accordance with the OSHA Hazard Communication Standard 29 CFR 1910.1200. Include a separate attachment indicating the specific worker protection equipment required for each material.

8. PRESSURE MONITORING DEVICES: Manufacturer's data on type of equipment to be used to provide a continuous record of pressure differentials. Provide a drawing showing locations and number of units to be used.

9. AIR FILTRATION DEVICES: Manufacturer's data on type of equipment to be used to remove airborne asbestos.

10. ROOM INSPECTION: Inspect all areas in which Work is to be performed. Inspection shall occur in the presence of representatives of the Owner and Owner's Air Mentoring Consultant. Record any existing damage to components, such as walls, doors, windows, carpeting, fixtures, and equipment. Any damaged components found after completion of the Work will be repaired at the Contractor expense. Make arrangements for the inspection, notify the participants, record the findings, and issue minutes of the inspection to all participants.

11. SCHEDULES: A copy of construction, staffing, and equipment schedules:

a. A construction schedule stating critical dates of the job including start and completion of mobilization, activation, deactivation, and demobilization of all Work activities (including mobilization, Work Zone preparation, asbestos abatement, inspection and clearance monitoring, each phase of refinishing, and final inspections). Update schedule with each partial payment request. Changes in schedule are subject to the Owner and Owner's Air Mentoring Consultant approval and require three (3) days prior notice;

b. A schedule of staffing stating number of workers per shift, name and number of supervisor(s) per shift, hours per shift, shifts per day, and total days to be worked;
c. A schedule of equipment to be used including numbers and types of all major equipment such as high efficiency particulate absolute (HEPA) air filtration units, HEPA vacuums, and airless sprayers.

d. A schedule for sealing the HVAC and exhaust ducts.

12. INSURANCE POLICIES: A copy of all Policies required by this Contract. Also, include insurance policies of any subcontractor, including the Sudden and Accidental Pollution Liability Insurance required of the Hauler.

a. Asbestos Abatement Contractor shall maintain the required Insurance coverage by the University/Owner; prior to the commencement of work.

b. The following list of Additional Named Insured must be included under all insurance policies associated with this project:

1. Brooklyn College
2. City University Construction Fund
3. City University of New York
4. City of New York
5. State of New York
6. Dormitory Authority of the State of New York (DASNY)
7. HARVEY MARSHALL BERLING ASSOCIATES, LLC

c. The Asbestos Abatement Contractor’s insurance company must maintain an A.M. Best rating of at least A-7 to be acceptable and proof of this must be submitted with the bid.

C. During the conduct of abatement activities, submit to the Owner’s Air Mentoring Consultant the following:

1. Printouts from pressure differential monitoring equipment marked with date and Work start/stop times for each day. Use printout paper that indicates elapsed time in intervals no greater than one hour. Indicate on each day recording times of starting and stopping abatement Work, type of Work in progress, breaks, and filter changes. Cut printout into segments by day and label with project name, Contractor's name and date;

D. Within thirty (30) days of removal from the premises, submit to the Owner and Owner’s Air Mentoring Consultant the disposal certificate(s) from the landfill receiving the Asbestos Waste stating dates and quantities received.

E. Within seven (7) days of completion of all Work associated with this Section submit to the Owner and Owner’s Air Mentoring Consultant the following:

1. A bound copy of the job log book showing sign in and sign out of all persons entering the Work Zone, including name, date, time, and position or function and a general description of daily activity. Keep these records on file for the duration of employment plus 30 years;

1.05 SPECIAL REPORTS
A. Except as otherwise indicated; submit special reports directly to the Owner and Owner’s Air Mentoring Consultant within one (1) day of the occurrence requiring the special report, with copies to all others affected by the occurrence.

B. When an event of unusual and significant nature occurs at the site (examples: failure of negative pressure system, rupture of temporary enclosures, unauthorized entry into Work Zone), prepare and submit a special report listing date and time of event, chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects, and similar pertinent information.

C. Report any accidents, at the site and anywhere else Work is in progress related to this project. Record and document data and corrective actions taken. Comply with industry standards.

1.06 QUALITY ASSURANCE

A. Where methods or procedures are specified, they shall constitute minimum measures and shall in no way relieve the Contractor of sole responsibility for the means, methods, techniques, sequences, or safety measures in connection with the Work.

B. Provide foremen who speak fluent English to supervise all abatement activities. Foremen shall be certified as handler supervisors in accordance with Section 1-35 of the NYCDEP Asbestos Control Program Regulations and with Section 902 of the New York State Labor Law Article 30, and have experience in this field and can furnish a record of satisfactory performance on at least three (3) projects for Work of comparable type.

C. Any proposed Subcontractor performing any Work under this Section “Asbestos Removal and Disposal” shall have similar qualifications. Submit qualifications with the Bid for any proposed Subcontractor. Submit Subcontractor qualifications in the same form and quantity as required for the Contractor.

1.07 APPLICABLE STANDARDS AND REGULATIONS

A. Perform all Work in compliance with the most current version of all pertinent laws, rules, and regulations, existing at the time of Work, including, but not limited to:

1. Code of Federal Regulations
   b. Title 30 CFR Part 11; [Mine Safety and Health Administration - Respirator Selection]
   e. Public Law 101-637[ASHARA]

2. New York State Official Compilation of Codes, Rules and Regulations.
   a. Title 12 Part 56
b. Title 10 Part 73

c. Title 6 Parts 360-364

d. Labor Law - Article 30 and Sections 900-912.

e. All applicable Additions, Addenda, Variances and Regulatory Interpretation Memoranda.

3. The City of New York

a. Local Law 70/85, Title 16, Chapter 1 of the Rules of the City of New York

b. Local Law 76/85, Title 15, Chapter 1 of the Rules of the City of New York

c. Local Law 80/86

d. Local Law 21/87

e. All applicable Additions, Addenda, Variances and Regulatory Interpretation Memoranda.

f. Department of Sanitation - Rules and Regulations governing the transport, storage and disposal of waste containing asbestos: Title 16, Chapter 8 of the Rules of the City of New York.

g. Building Code.

h. Fire Department of the City of New York –Rules and Regulations regarding maintenance of means of egress in the Fire Code that FDNY inspectors will enforce during their inspections: Section FC 1027 – Maintenance of the Means of Egress.

4. Applicable Standards


c. UL 586 Test Performance of High Efficiency Particulate Air-Filter Units.

B. In the event there is a conflicting point between these provisions, the most stringent one shall apply.
1.08 AIR MONITORING

A. The Owner will retain an independent testing agent who shall conduct personnel air monitoring in accordance with OSHA requirements. Collect a sufficient number of samples to determine the Time Weighted Average exposure of twenty percent (20%) of the work force.

B. The Owner’s agency will provide PCM area air monitoring for Background, Pre-Abatement, During Abatement Activities, and Clearance Air Monitoring. Clearance Air Monitoring may also be by TEM if required.

C. If analysis of any of the air samples collected during abatement indicates that the airborne asbestos concentration outside the Work Zone is greater than or equal to 0.01 f/cc or the background level, whichever is greater:
   1. Stop Work immediately;
   2. Inspect the integrity of the barriers;
   3. Wet clean and HEPA vacuum the location where elevated fiber counts were reported; and
   4. Do not resume Work until such time when the airborne asbestos concentration outside the Work Zone is once again less than the above limit.

D. In order to pass PCM clearance testing done by the Owner’s agent, the analysis of each and every sample collected shall indicate that the airborne fiber concentration is less than 0.01 fibers per cubic centimeter or the background level whichever is greater.

E. In order to pass TEM clearance testing done by the Owner’s agent, the average of the samples collected inside the work area shall indicate that the airborne concentration of asbestos structures of less than 70 s/mm² or the average structure concentrations inside the Work Zone shall not be statistically larger than the average of ambient levels as determined by the Z-test.

F. The method of sampling done by the Owner’s agent shall be aggressive or non-aggressive depending on the requirements of applicable regulations. The method of analysis for pre-abatement and during abatement shall be NIOSH 7400 using Phase Contrast Microscopy (PCM). The testing laboratory shall be a member of the Environmental Laboratory Approval Program (ELAP).

G. In case of failure of the air monitoring done by the Owner’s agent, the Work Zone shall be retested done by the Owner’s agent, following immediate re-cleaning. This process shall be repeated as necessary until the above criteria are met. All costs and expenses resulting from all additional re-cleaning and retesting (including sampling and analysis, as detailed below) due to failure of the final air clearance shall be borne by this Contractor. Under this contract, the expenses thereby incurred shall be deducted from any monies due or that may become due to this Contractor under this Contract. For the purposes of this paragraph, the cost of PCM sampling and analysis shall be seven hundred dollars ($700) for a PCM test and two thousand dollars ($2,000) for a TEM test.

PART 2 - PRODUCTS

2.01 AIR FILTRATION UNITS

A. Use only Air Filtration Units in compliance with ANSI Z9.2 (1979), Local Exhaust Ventilation. The final filter in each unit shall be of the HEPA type. Use only Air Filtration Units certified by the
manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 micron diocylphthalate (DOP) particles.

B. Equip the system with the following:

1. An automatic shutdown that will stop the fan in the event of a rupture in the HEPA filter or blocked air discharge;
2. Warning lights and/or alarms to indicate an excessive pressure drop across the filters or an insufficient pressure drop across the filters;
3. A non-resettable elapsed time meter to indicate the total accumulated hours of operation;
4. A gauge or manometer to measure the pressure drop across the filter.

2.02 ASBESTOS CAUTION SIGNS
A. Use Asbestos Caution Signs as specified in OSHA Title 29 CFR 1910.1001(j) and 1926.1101(k).

2.03 ASBESTOS CAUTION LABELS
A. Use Asbestos Caution Labels as specified in OSHA Title 29 CFR 1910.1001(j) and 1926.1101(k).

2.04 DISPOSAL BAGS
A. Use Disposal Bags which are a minimum six (6) mil in thickness, clear in color and preprinted with the Asbestos Caution Label.

2.05 ENCAPSULATING MATERIAL
A. All Encapsulating Materials shall be approved by UL for use in class 1A buildings and shall have composite fire and smoke hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723.

   Flame Spread   25
   Smoke Developed 50

B. If the removal of fireproofing materials is included in this Contract, select an encapsulant from those approved by UL for use with the new fireproofing. If Retro-Guard Type RG or RG-1 manufactured by W.R. Grace & Co. is to be applied, use American Coatings 22P & 22 Powerlock, or Fiberlock Fiberset FT and Fiberset PM, or Certane 909 and 1000, or H.B. Fuller 32-60 and 32-61, or IPC Serpliflex and Serpiloc.

2.06 EQUIPMENT
A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.

B. All electrical equipment shall be in compliance with the National Electric Code. Attention is specifically called to Article 305 Temporary Wiring.

2.07 FIRST AID KITS
A. Maintain adequately stocked first aid kits in the Clean Room and Work Zone, in accordance with OSHA requirements.
2.08 HIGH EFFICIENCY PARTICULATE AIR (HEPA) FILTERS
A. Employ filters which have been individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 micron dioctylphthalate (DOP) particles, in accordance with Military Standard Number 282 and Army Instructional Manual 136-300-175A. Each filter shall bear a US 586 label to indicate ability to perform under the specified conditions.
B. Each HEPA filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of air flow.

2.09 PLASTIC
A. Use only new fire retardant plastic sheets of polyethylene, which has a minimum thickness of 6 mil, true grade.
B. For the initial floor protective layer use only new fire retardant reinforced plastic sheets of polyethylene, that has a minimum thickness of ten (10) mil, true grade.

2.10 PLYWOOD
A. Use only fire-rated CDX plywood, which is at minimum one half inch (3/8") in thickness.

2.11 RESPIRATORS
A. Use only respirators approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.12 SEALANTS
A. Use combination fire stop foam and fire stop sealant. Use Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant or as approved. Apply in accordance with manufacturer’s recommendations.

2.13 STUDS
A. Use only 2" x 4" or 2" x 6" fire-rated CDX or metal studs.

2.14 VACUUMS
A. Use only vacuums equipped with HEPA filters.

2.15 WETTING AGENTS
A. The wetting agent shall be water amended with one (1) oz. of a chemical surfactant per five (5) gallons of water. The composition of the surfactant shall be approximately 50% polyoxyethylene ether and 50% polyoxyethylene esters.

2.16 NOTICE OF ASBESTOS ABATEMENT
A. In a minimum of one inch sans serif, gothic or block style lettering, with the balance of the lettering of the notice to be of the same type lettering in a minimum of one quarter inch size. The notices shall be posted 7 calendar days prior to the start of the project and shall remain posted until clearance air monitoring is satisfactorily concluded. Information provided in the notification...
shall include contractor, project location and size, amount and type of ACM, abatement procedure, dates of expected occurrence and the [NYC-DEP telephone number] Call Center "311" for government information and services. Postings of this notification shall be in English and Spanish, at eye level, in a conspicuous, well-lit place, at the entrances to the work place and immediate adjacent areas.

B. A floor plan showing the areas of the building under abatement and the location of all fire exits in said areas shall be prominently posted in the building lobby or comparable location, along with a notice stating the location within the building of the negative air cutoff switch.

PART 3 - EXECUTION

3.01 PERSONNEL PROTECTION

A. Satisfy all applicable Worker protection requirements.

B. Provide protective equipment for use by Workers and designated representatives of the Owner including disposable full body coveralls, respirators and approved cartridges, gloves, hard hats, and goggles. Maintain on site, two (2) sets of protective equipment for the exclusive use of representatives of the Owner.

C. At all times, provide all persons with personally issued and marked respiratory equipment suitable for the asbestos exposure level in the Work Zone. Ensure that all persons properly use this equipment at all times.

D. As a minimum, half face negative pressure type respirators must be worn by all personnel during Work Zone preparation. If airborne concentrations of asbestos inside the Work Zone exceed 0.1 fibers per cubic centimeter, employ either PAPR or type "C" respiratory protection whichever is appropriate.

E. PAPRs (Powered Air Purifying Respirators) shall constitute the minimum level of respiratory protection for all persons entering that Work Zone from the time the Work Zone is activated until acceptance.

F. Should airborne concentrations of asbestos inside the Work Zone exceed 2.0 fibers per cubic centimeter, supply all personnel with personally issued and marked Type "C" supplied air respirators operated in the positive pressure demand mode.

G. If the permissible respirators fail to provide sufficient protection against volatile substances emitted by any sealants or other chemicals used, the services of a certified industrial hygienist will be procured, at the Contractor's expense, to determine proper respiratory protection. Owner and Architect will not be liable for the cost of increased respiratory protection.

H. Maintain surveillance of heat stress conditions in the Work Zone. The prevailing Threshold Limit Values (TLVs) for heat stress and the method of heat stress measurement adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) shall govern worker exposure to heat stress.

3.02 DECONTAMINATION

A. Construct and operate the Personnel Decontamination Enclosure Systems in conformance with all applicable rules and regulations. Locate decontamination unit outside of the Work Zone.
B. Construct the Personnel Decontamination Enclosure System (PDES) as a series of completely enclosed and connected rooms: an Equipment Room, an Airlock, a Shower, a second Airlock, and a Clean Room. Separate rooms with curtained doorways.

1. Ensure that all egress from the Work Zone is through the PDES.
2. Ensure that all persons leaving the Work Zone vacuum themselves of asbestos in the Work Zone and disrobe in the Equipment Room, shower (including washing of hair) with respirator on, and redress in the Clean Room.
3. Ensure that all persons entering the Work Zone wear clean and new protective clothing and equipment prior to entrance.
   
   4. Equip the Shower with hot and cold water adjustable at the tap, liquid soap, shampoo and disposable towels.
   
   5. Leave all contaminated clothing and equipment in the Equipment Room in barrels or bags. Sanitize respirators in the showers. Equip with fresh cartridges in the Clean Room.

6. No more than one curtained doorway shall be opened at the same time.

C. Remove all asbestos containing waste materials, equipment, or any other materials through the Waste Decontamination Enclosure System (WDES). Remove materials, waste and equipment as follows:

1. No more than one curtained doorway shall be opened at the same time.

2. Before removing any equipment or asbestos from the Work Zone,
   
   a. Containerize (or bag) all asbestos;
   
   b. Wet cleans all equipment and packaged asbestos.

3. Place equipment and asbestos in the first Airlock. Workers in the Work Zone shall not enter the Airlock and the Curtained Doorway between the Airlock and the Washroom shall remain closed during this procedure.

4. Uncontaminated Workers in clean new protective equipment shall enter the PDES from outside the Work Zone and enter the Washroom.

5. While in the Washroom:
   
   a. Remove Waste and Equipment from the first Airlock;
   
   b. Wet clean all equipment and all packaged asbestos containing waste;
   
   c. Place bags and other containers into an additional completely clean bag or wrap in fire-retardant plastic. Bags and fire-retardant plastic used for this purpose shall not enter the Work Zone;
   
   d. Place equipment and asbestos in the second Airlock. Workers in the Work Zone shall not enter the Airlock and the Curtained Doorway between this Airlock and the Holding Area shall remain closed during this procedure.
6. Uncontaminated Workers in clean new protective equipment shall enter the Holding Area from the outside area and remove containerized materials from the airlock.

7. All workers shall proceed into the Work Zone for exiting by way of the PDES. Ensure that personnel do not leave the Work Zone through the PDES.

3.03 WORK ZONE PREPARATIONS

A. Electrical Power: Unless otherwise indicated, shut down all electric power within the Work Zone, as follows:

1. Lock all circuits, which have been shut off, in the off position and label with a printed tag which reads as follows:

   "TEMPORARY DISCONNECT
   Due to Asbestos Removal Project
   DO NOT ACTIVATE THESE CIRCUITS"

2. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements. Provide all equipment which must remain operable, as well as all temporary ground-fault interrupter circuits for lights and electrical equipment. Individually protect all power equipment used inside each Work Zone with in-line ground fault interrupters. Locate ground-fault interrupter outside of the Work Zone.

3. Provide all electrical tie-ins and extensions. Provide a temporary panel board, connected to an electric panel designated by the Owner.

B. Heating Ventilation and Air Conditioning (HVAC): Employ all means necessary to prevent contamination and fiber dispersal to other areas of the structure, as follows:

1. Thoroughly clean all HVAC Equipment and duct work in the Work Zone. Seal all vents within the Work Zone with tape and fire-retardant plastic. Seal all HVAC duct seams. Wrap all ductwork in two (2) independent layers of fire-retardant plastic.


3. Remove all heating and ventilating equipment grills, diffusers, returns, and other items located on the asbestos bearing surfaces. Wet clean all such items, seal in two (2) independent layers of fire-retardant plastic and remove from the Work Zone. Reinstall all displaced items after satisfactory clearance air testing.

4. HVAC systems shall be treated as follows:

   a. Unless otherwise indicated, shutdown and lockout all heating, ventilating and air conditioning systems. Isolate system at points of entry to the Work Zone; use two (2) independent layers of fire-retardant plastic.

   b. In cases where the HVAC system serving the Work Zone also serves other areas of the building which must remain in operation,

      i. Isolate the ductwork entering the Work Zone from the remainder of the system. Cap all ductwork where it passes in or out of the Work Zone with galvanized steel ASTM 5261 in accordance with SMACNA HVAC
Duct Construction Standards. Cover with two (2) layers of fire-retardant plastic.

ii. Operate the affected HVAC system twenty-four (24) hours per day from the initiation of Work Zone activation until successful final air clearance. Maintain a positive pressure within the operational portion of the HVAC system of 0.05 inch water gauge or greater with respect to the ambient pressure outside of the Work Zone. Install pressure monitoring devices.

c. In cases where it is necessary for ductwork passing through the Work Zone to remain active, the following conditions are to be maintained:

i. Maintain a positive pressure within the HVAC system of 0.05 inch water gauge (or greater) with respect to the ambient pressure outside of the Work Zone: the conditions for this system shall be maintained and be operational twenty-four (24) hours per day from the initiation of Work Zone preparation until successful final air clearance.

ii. Test, inspect and record the positive pressure in the duct both at the beginning and at the end of each shift.

iii. Monitor the positive pressurization of the duct using instrumentation that will trigger an audible alarm, if the static pressure falls below the set value.

iv. Place the supply air fan and the supply air damper for the active positive-pressurized duct in the manual "on" position to prevent shutdown by fail safe mechanisms.

v. Shut down and lock out the return air fan and the return air dampers.

vi. Cover all active HVAC ducts that pass through the Work Zone with two (2) layers of fire-retardant plastic.

C. Hot Water and Steam Systems: Unless otherwise noted on the Drawings shut down all hot water and steam systems passing through the Work Zone prior to activation.

D. Utilities: Provide all water, electrical and waste facility connections, as well as all sanitary drains. The Contractor will not be charged for water used, electricity consumed, or discharges made to sanitary sewers as a part of this project.

E. Temporary Service Lines: Upon completion of abatement activities, remove all temporary service lines and restore to their original conditions, in a manner acceptable to the Owner. Repair any part of the permanent service lines, equipment and building facilities disturbed or damaged as a result of the installation or removal of the temporary service lines.

F. Movable Objects: Before Work is initiated; clean all items which can be removed without disrupting any asbestos material. Pre-clean movable objects within the proposed areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate; remove such objects from Work Zones to a temporary location, as directed by the Owner and Owner’s Air Mentoring Consultant.

G. Fixed Objects: Pre-clean non-removable objects within the proposed Work Zones, using HEPA filtered vacuum equipment and wet cleaning methods as appropriate prior to abatement activities, and enclose with two (2) layers of fire-retardant plastic sealed with tape.
H. **Openings:** Prior to placing fire-retardant plastic on walls, floors and ceilings, seal off all openings, including, but not limited to corridors, doorways, windows, skylights, ducts, grills, diffusers, and any other penetrations of the Work Zones, with two (2) layers of fire-retardant plastic sealed with tape.

I. **Floor, Wall and Ceiling Penetrations:** Prior to any abatement activities fire stop all openings or penetrations that have not already been sealed. This includes both empty holes, expansion joints and holes accommodating items such as cables, pipes, ducts, conduit, etc.

J. **Fire Exits:** Maintain emergency and fire exits from the Work Zones, or establish alternative exits satisfactory to the local fire officials. Provide panic exit devices for security and egress. Establish this exit in accordance with all applicable codes and regulations.

   The daily inspection to ensure that exits have been checked against exterior blockage or impediments to exiting as per section 1-81(s) shall be documented in the log book. If exits are found blocked, abatement activities shall stop until the blockage is cleared.

K. **Signs:** Outside of the perimeter barrier and at all entrances and exits to the Work Zone, post signs in English, Spanish and any other language spoken at the project location.

   1. The signs shall read:

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASBESTOS</td>
</tr>
<tr>
<td>CANCER AND LUNG DISEASE</td>
</tr>
<tr>
<td>HAZARD</td>
</tr>
<tr>
<td>Authorized Personnel Only</td>
</tr>
<tr>
<td>Respirators and Protective Clothing are Required In This Area</td>
</tr>
</tbody>
</table>

   2. Demarcate the regulated area. Post signs at such a distance from the area that an employee will read these signs before entering the area.

L. At least one fire extinguisher with a minimum rating 2-A:10-B:C shall be required for each work place. In the case of large asbestos projects, at least two such fire extinguishers shall be required.

M. All of the above procedures shall be completed prior to the disturbance of any asbestos containing material.

3.04 **ENGINEERING CONTROLS**

A. Maintain the Work Zone at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of the negative 0.05 (-0.05) inch differential is present.

B. From the start of abatement activities:
1. Operate air filtration units continuously during the project, twenty-four (24) hours a day, from the start of abatement through successful clearance air monitoring, in accordance with "Specifications and Operating Procedures for the Use of Negative Pressure Systems for Asbestos Abatement", Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA Report Number 560/5-85-024 (1985).

2. Install the air filtration units in quantities and locations, as shown on the Drawings.

3. Provide a minimum of one air change every ten (15) minutes for the area under negative pressure. Assume Air Filtration Units will operate at 50% of their rated capacity. Maintain on site, one (1) spare air filtration unit for every five (5) in use.

4. Locate the exhaust unit(s) so that makeup air enters the Work Zone primarily through the Decontamination Systems and traverses the Work Zone as much as possible. Provide the specified number of air changes throughout the Work Zone. Place the end of the unit or its exhaust duct through an opening in the fire-retardant plastic barrier or wall covering. Seal the fire-retardant plastic around the unit or exhaust duct with tape.

5. Whenever possible, exhaust air filtration units to the outside of the building away from occupied areas in such a manner so that the air intake ports, louvers, or entrances for the building or adjacent buildings will not be adversely affected. In cases where it is impossible to exhaust outside of the building, provide a second air filtration unit in series. Not to exceed 25 feet in length.

6. Use ducting, of equivalent or larger dimension as that of the air filtration unit exhaust port, to exhaust to the outside of the structure. Ducts shall exhaust, at minimum fifteen (15) feet from all intakes or entrances to the building or adjacent buildings. Seal and brace all ductwork. Maintain airtight joints. Prevent fiber release into uncontaminated building areas.

7. Place the air filtration system exhaust ducts overhead in an inconspicuous, non-restricting fashion. Connect the ducts to a 14" flange, as shown on the Drawings.

8. All filters shall be accessible from the Work Zone or contaminated side of the barrier. Prior to initial use, replace all filters in air filtration units in the presence of the Owner’s Air Mentoring Consultant with new and unused filters.

9. Use a dedicated power supply for the air filtration units.

10. In the event of loss of negative pressure or electric power to the negative pressure ventilating units, stop all abatement Work immediately. Do not resume Work until power is restored and negative pressure equipment is operational. Under no circumstances shall any Asbestos abatement take place without having the negative air pressure system fully operational.

11. When loss of negative pressure equipment lasts or is expected to last longer than one-half hour:
   a. Seal airtight all auxiliary make-up air inlets;
   b. Seal all Decontamination Systems airtight after the evacuation of all personnel from the Work Zone;
   c. All adjacent areas will be monitored by the Owner’s independent agent at the Contractor's expense for asbestos fiber concentration.
12. Use ventilation smoke tubes to check the system performance.

3.05 ASBESTOS REMOVAL

A. Full Containment:

Work in this part shall be performed in accordance with New York City Title 15.

Completely isolate the Work Zone as shown on the Drawings. Extend the Work Zone to such limits as to permit the removal of all asbestos containing materials within the Work Zone. Isolate the Work Zone as follows:

1. Construct the Decontamination Units for personnel as shown on the Drawing. Use studs, sixteen inches on center, covered with fire-rated CDX plywood and one (1) sheets of fire-retardant plastic and two (2) sheets of reinforced 6 mil fire-retardant plastic on floor. Connect units directly to the Work Zone.

2. Construct isolation barriers. Where feasible, use existing walls and partitions. Where necessary, frame temporary partitions with studs sixteen (16) inches on center. To support fire-retardant plastic for all areas larger than thirty-two (32) square feet, except where one of the dimensions is less than one (1) foot, reinforce temporary partitions with fire-rated CDX plywood. Test the negative pressure system to insure that the negative 0.05 (-0.05) inch differential is present.

3. Cover all interior surfaces of the Work Zone with a two (2) independent layers of fire-retardant plastic except where abatement will occur. Use 2 layers of 6 mil fire-retardant plastic on floor. Plasticize floor first and extend up walls 12 inches on each side. Cover wall from ceiling to floor with plastic sheeting. Next the ceiling shall be plasticized with overlay 12 inches on to wall. This process shall be repeated with second layer. All seams and layers shall be overlay at least 12 inches and then sealed airtight with duct tape. Inspect all fire-retardant polyethylene sheeting three times a day for sagging and repair all such sags or failures immediately.

4. Install a second layer of fire-retardant polyethylene sheeting on all interior Work Zone Surfaces. Repeat procedure detailed above in 3.05.A.4.

5. Secure a source of water within the Work Zone (other than the Shower within the Decontamination Zone) for wetting and cleaning.

6. Test the negative pressure system prior to any abatement actions to insure that the negative 0.05 (-0.05)-inch differential is present. Wait twelve (12) hours. Test system again. If the test results are acceptable to the Independent Testing Agency the Work Zone will be activated. Do not disturb Asbestos-containing materials prior to activation.

7. Wet all Asbestos prior to removal using a wetting agent. Maintain asbestos wet until packaged for disposal.

8. Upon detachment from the substrate, directly bag or drop into a flexible catch basin all asbestos containing waste material. If asbestos containing materials are located more than ten (10) feet above the floor, use a dust free enclosed chute. Maximum inclination from the horizontal shall be 60 degrees.

B. Tent and Glove bag Procedures:
Work in this part shall be performed in accordance with New York City Title 15, Tent and/or Glove Bag Procedure §1-105, §1-106. The sequence of abatement activities shall be as follows:

1. The areas worked on shall be unoccupied and blocked off to uncertified personnel with barricade tape and with asbestos warning signs. Only certified personnel will be allowed in the abatement areas during work and up until the time clearance air tests are passed.

2. A Personal and Waste Decontamination Enclosure System shall be constructed. ACM shall be bagged and brought to the Decontamination Enclosure System. At the Decontamination Enclosure, the bags will be wet wiped and the waste double bagged.

3. Critical barriers in the work areas (including but not limited to windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas) shall be sealed with two independent layers of at least six (6) mil, fire-retardant polyethylene sheeting sealed airtight with duct tape.

4. The negative pressure ventilation equipment shall be used to continuously exhaust the enclosed area as specified under§1-91 and Engineer Control section from this documents, except that the negative air pressure shall be demonstrated by smoke testing. The negative pressure ventilation units shall be checked on a daily basis for clogging and if need be, replace filters. The house shall be attached securely and airtight through the tent wall at the most remote location possible from the ACM to be disturbed. After placement, each glovebag must pass a smoke test. The glovebag shall be placed under negative pressure utilizing a HEPA vacuum, and a smoke tube shall then be aspirated to direct smoke at all seams and seals from outside the glovebag. Any leaks detected by the smoke test shall be duct taped airtight.

5. Operation of negative pressure which shall be maintained at all times in the work areas during the asbestos abatement work to ensure the contaminated air in the work areas does not filter back to an uncontaminated area.

6. Within glovebag/tent enclosures, minimum of two (2) volumes per hour is required.

7. Removal of ACM shall be by wet methods in accordance with New York City Title 15 §1-102. ACM removed shall be placed in a leak tight container without dropping it.

8. Upon completion of abatement, and prior to tent collapse, the enclosed surface shall:
   a) be wet cleaned using rug, mops or sponge; and
   b) be permitted sufficient time to dry, prior to HEPA vacuuming all substrates; and
   c) be lightly encapsulated to lockdown residual asbestos

9. The tent shall be collapsed inward, enclosing the contaminated clothing. This contaminated material shall be disposed of in another plastic bag. The HEPA vacuum shall be decontaminated and sealed.

9. Glovebags shall not be reused or relocated.

C. ACM removal procedure by utilized NYCDEP Variances - Modified tent procedures with remote decontamination unit(s) Attachment TM, D and/or R.

1. 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.

2. 15 RCNY 1-106 shall be complied with except that:
(1) All tents shall be lined with 2 layers of fire-retardant polyethylene 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).
(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.

3. 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).

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

5. An airlock with lockable door 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

6. 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 1-106(l), before each worker exits any airlock.

7. 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 and/or Attachment D.

8. 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.

9. After the ACM removal and bagging [refer 15 RCNY 1-106(g) & (h)], 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 to storage in an enclosed waste container in holding area and/or to legal means of disposal.

10. 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 any residual asbestos. Clean up process shall extend from the interior to the exterior surface of the aluminum spandrel column.

11. If the integrity of the tent is compromised and or visible emissions are detected outside the tent and/or levels exceed 0.01 f/cc, work shall stop and 15 RCNY 1-45 (a) shall be complied with immediately.

12. When the work area is dry, final clearance air testing shall be conducted. To determine final air clearance, the following air samples shall be collected for each tent (provided that the amount of ACM is less than 160 square feet per tent):

   a. Three (3) PCM samples inside work area and three (3) PCM samples outside work area. Clearance monitoring shall be considered satisfactory when every sample is less than or equal to 0.01 f/cc or less than the ambient concentration, whichever is
greater.

or

b. Three (3) TEM samples inside work area and three (3) TEM samples outside work area. TEM samples shall be collected and analyzed in accordance with AHERA TEM protocol. When volumes greater than or equal to 1,199 liters for a 25 mm filter have been collected and all the TEM samples inside the abatement area is less than 70 s/mm² of filter, the abatement work shall be considered complete without comparing the inside samples to the outside samples.

D. Floor Tiles/Mastic and Covebase Glue Removal

Removal of asbestos-containing floor materials shall be accomplished as described in this specification and NYC Title 15 paragraph 1-108 Foam/Viscous Liquid Use in Flooring Removal.

These procedures only apply to the removal of vinyl asbestos floor tiles (VAT), ACM floor coverings (e.g., linoleum) and associated mastics and adhesives, where the only ACM being abated in the work area is flooring material. All sections of these rules shall be followed in conjunction with this section with the exception of §1-41(c), §1-41(d), §1-81(m), §1-81(p), §1-91(c), §1-91(h), §1-102(b), §1-112(b), §1-112(d), and §1-112(e).

1. The foam or viscous liquid shall be non-toxic, shall not require special respiratory protecting for handling, and shall not affect the handling and disposal of the waste.

2. The foam or viscous liquid shall coat and maintain a stable blanket (minimum 1" thickness) for the duration of the removal process and shall leave an identifiable colored residue when it dissipates. The acceptable foam or viscous liquid shall be maintained for the duration of the removal until the material is bagged.

3. The foam or viscous liquid shall coat and wet the ACM. The ACM shall be kept wet through the bagging process.

4. Persons entering the work area shall wear correctly-fitting, good-traction rubber boots.

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

6. All movable objects shall be removed from the floor tiles.

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

8. All penetration in and along the floor shall be sealed.

9. Baseboards and wall surfaces up to a minimum height of four feet above the floor shall be covered with a layer of fire retardant 6-mil plastic sheeting. If hand power tools are used during the abatement, wall surfaces shall be covered with a layer of fire retardant 6-mil polyethylene sheeting to a minimum height of six feet.

10. Negative air pressure ventilation shall be provided to allow make up air into the work area, and air outlet from the work area shall be at or near the floor level.

11. Remove floor tile/paint and all underlying layers or using a flat hoe or scraper utilized mastic/paint removal solvents if necessary.

12. Completely remove floor tile and adhesive backing of floor paint using appropriate tools and materials. As material is removed, wrap it in two layers of plastic and place it in labeled containers for transport.
13. Place waste in 6-mil bag dedicated for the disposal of ACM floor tile mastic/floor paint 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.

14. On completion of floor mastic or floor paint removal the floor shall be smooth, free from ridges and bumps, and suitable to receive replacement flooring.

E. Thermal System Insulation Removal:

The Contractor shall use work methods and equipment which will keep the fiber count during abatement operations inside the work area to less than 0.01 fibers/cc of air when tested by NIOSH Method 7400.

A. Removal of asbestos-containing thermal system insulation using full containment procedures (large projects).

The sequence of abatement activities shall be as follows:

1. Prepare the area as described in Subparagraph "3.3 Work Zone Preparations" of this Section.

2. Providing a continual mist of amended water or removal encapsulant to the insulation, leaving it intact. Spray asbestos materials with a fine mist of amended water or removal encapsulant, saturating materials to substrate. Spray the asbestos material repeatedly during work process to maintain a wet condition and to minimize asbestos fiber dispersion.

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

4. 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.)

5. 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.

6. 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.

B. Removal of thermal system insulation utilizing Modified Tent Procedures (For Gross Removal of Small Project) shall be accomplished as follows:

1. 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.

2. 15 RCNY § 1-106 shall be complied with except that (1) all tents shall be lined with 2 layers of plastic sheeting (6-mil thickness at a minimum), and (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).

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.

4. All modified tents shall be fully framed (including horizontally across the top, if applicable) with 2x3 (minimum) fire retardant 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

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

6. 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

7. 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 § 1-106(l), before each worker exits any airlock.

8. 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.

9. 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.

10. 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.

11. 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.

F. Black Wall Mastic and Wall Panel Glue

A. Full Containment:

Work in this part shall be performed in accordance with New York City Title 15. Completely isolate the Work Zone and

1. Construct the Decontamination Units for personnel as shown on the Drawing. Use studs, sixteen inches on center, covered with fire-rated CDX plywood and one (1) sheets of fire-retardant plastic and two (2) sheets of reinforced 6 mil fire-retardant plastic on floor. Connect units directly to the Work Zone.

2. Construct isolation barriers. Where feasible, use existing walls and partitions. Where necessary, frame temporary partitions with studs sixteen (16) inches on center. To support fire-retardant plastic for all areas larger than thirty-two (32) square feet, except where one of the dimensions is less than one (1) foot, reinforce temporary partitions with
fire-rated CDX plywood. Test the negative pressure system to insure that the negative 0.05 (-0.05) inch differential is present.

3. Cover all interior surfaces of the Work Zone with a two (2) independent layers of fire-retardant plastic except where abatement will occur. Use 2 layers of 6 mil fire-retardant plastic on floor. Plasticize floor first and extend up walls 12 inches on each side. Cover wall from ceiling to floor with plastic sheeting. Next the ceiling shall be plasticized with overlay 12 inches on to wall. This process shall be repeated with second layer. All seams and layers shall be overlay at least 12 inches and then sealed airtight with duct tape. Inspect all fire-retardant polyethylene sheeting three times a day for sagging and repair all such sags or failures immediately.

4. Install a second layer of fire-retardant polyethylene sheeting on all interior Work Zone Surfaces.

5. Secure a source of water within the Work Zone (other than the Shower within the Decontamination Zone) for wetting and cleaning.

6. Test the negative pressure system prior to any abatement actions to insure that the negative 0.05 (-0.05)-inch differential is present. Wait twelve (12) hours. Test system again. If the test results are acceptable to the Independent testing agent, the Work Zone will be activated. Do not disturb Asbestos-containing materials prior to activation.

7. Wet all Asbestos prior to removal using a wetting agent. Maintain asbestos wet until packaged for disposal.

8. Upon detachment from the substrate, directly bag or drop into a flexible catch basin all asbestos containing waste material. If asbestos containing materials are located more than ten (10) feet above the floor, use a dust free enclosed chute. Maximum inclination from the horizontal shall be 60 degrees.

3.06 ENCAPSULATION

A. Apply Encapsulating material using an airless sprayer. Comply with manufacturer's recommendations.

1. The Encapsulating material shall be mixed with contrasting color paint to assure proper application.

2. All work shall be done in accordance with New York City Title 15 §1-103.

3. All material used for repair or encapsulation of asbestos-containing material shall have a flame spread rating, fireproofing, and smoke characteristics similar to the material being encapsulated. The encapsulant shall not alter the insulating characteristics of the material subject to encapsulation, and shall comply with current fireproofing standards and the encapsulant shall not add excess weight to the material increasing the potential that the material may lose cohesion or adhesion.

3.07 DISPOSAL PRACTICES

A. Wet and properly package all Asbestos prior to removal from the Work Zone via the Waste Decontamination Enclosure System. Remove all residual asbestos from the exterior of any package, drum, bag, or other container of Asbestos prior to removal from the Work Zone. Affix the ASBESTOS CAUTION label, the name of the Owner, the name of the Contractor, the name of any Tenant and the location where generated to all packages, drums, bags or other containers used for Asbestos disposal.
B. Store all Asbestos Waste in a totally secure manner. Transport all Asbestos Waste to the disposal site within seven (7) days after completing the Work of this section or thirty (30) days after removal, whichever comes first.

C. Transport Asbestos Waste through the building where directed by the Owner and/or Owner’s Air Mentoring Consultant at times designated by the Owner. Use sealed carts. Owner will arrange for the use of a freight elevator at no cost to the Contractor.

D. During the transport of Asbestos Waste, on or across public thoroughfares, employ a hauler bearing all required permits for the hauling of asbestos. The haulers shall carry insurance in the same types and amounts as the Contractor. In addition, the hauler shall carry “Sudden and Accidental Pollution Liability Insurance in an amount not less than $1,000,000.

E. Dispose of Asbestos Waste at a landfill bearing all appropriate licenses and permits for asbestos disposal and operated in compliance with all applicable rules and regulations. The Landfill used shall be dedicated for asbestos materials only and shall not accept any other hazardous substances.

3.08 CLEAN-UP PROCEDURES

A. Daily during the conduct of abatement activities:

1. Clean-up visible accumulations of loose Asbestos Waste whenever a sufficient amount of Asbestos Containing Material to fill a single asbestos waste bag has been removed. Removal all waste materials from the Work Zone at the end of each work shift. Maintain visible material wet until after clean up.

2. Place visible accumulations of Asbestos Waste in containers utilizing non-metallic dust pans and non-metallic squeegees or vacuums.

3. Do not use metal shovels.

4. Wet clean and vacuum all surfaces of the Work Zone on a daily basis.

5. Upon completion of waste removal, wet clean the PDES twice. When the PDES Shower Room alternates as a Washroom, wash the Shower Room immediately with cloths or mops saturated with a detergent solution prior to wet cleaning.

6. Wet clean and vacuum the PDES as appropriate, as a minimum after each shift change and meal break.

7. If excess water accumulates in the Work Zone, stop Work until the water is collected and disposed of properly.

8. If Asbestos Waste is spilled in an elevator shaft:

   a. Immediately evacuate, shut down and isolate all of the elevators in the affected elevator bank.

   b. Place all spilled visible accumulations of Asbestos Waste in clean and unused containers.
c. Vacuum and wet clean all of the contaminated surfaces in the elevator car and shaft in repetitive cycles until clearance air levels are achieved in the car and at each terminus of the shaft.

B. Final Clearance. The Work Zone will be considered acceptable when it has passed both visual inspections and air testing performed by the Owner’s agent according to the criteria and sequence below:

1. In order to pass each of the visual inspections, the Work Zone and adjacent areas shall be free of all visually apparent asbestos. Any disputes over the results of any visual inspection shall be resolved by the Contractor submitting the results of bulk sample analysis demonstrating the contents of the material in question. Remove all Asbestos materials and all asbestos contaminated materials; non-asbestos materials may remain. The laboratory performing such analyses shall be a regular participant in the ELAP Quality Assurance Program for bulk sample analyses with performance results satisfactory to the Owner’s Air Mentoring Consultant. The Owner and Owner’s Air Mentoring Consultant reserve the right to independently verify the bulk results.

2. If the Work Zone is not suitable for acceptance for any reason, promptly perform the Work requested by the Owner and Owner’s Air Mentoring Consultant.

3. Keep each Work Zone isolated and posted with ASBESTOS CAUTION and CAUTION KEEP OUT signs until after acceptance.

4. The acceptance sequence shall be as follows:

a. After removal of visible accumulations of Asbestos Waste, vacuum all surfaces;

b. Remove all bagged materials from the Work Site;

c. Wet clean and vacuum all objects and surfaces in the Work Zone;

d. Visual inspection by Owner’s Air Mentoring Consultant;

e. Encapsulate all fire-retardant plastic within the Work Zone limits; do not encapsulate surfaces from which asbestos was removed;

f. Remove, bag, and remove from the Work Site the first layer of fire-retardant plastic, leaving all isolation barriers in place;

g. Vacate the Work Zone for twelve (12) hours;

h. Wet clean and vacuum all objects and surfaces in the Work Zone for a second time;

i. Visual inspection by Owner’s Air Mentoring Consultant;

j. Again encapsulate all fire-retardant plastic within the Work Zone limits, do not encapsulate surfaces from which asbestos was removed;

k. Remove, bag and remove from the Work Site the second layer of fire-retardant plastic, leaving all isolation barriers in place;

l. Vacate the Work Zone for four (4) hours;
m. Wet clean and vacuum all surfaces in the Work Zone for a third time;

n. Vacate the Work Zone for one (1) hour;

o. Visual inspection by Owner’s Air Mentoring Consultant to verify the absence of Asbestos Waste, dust and or debris;

p. When a satisfactory visual inspection has been completed, all surfaces from which asbestos was removed shall be encapsulated;

q. Air testing;

r. After successful Final Air Clearance has been achieved, all isolation barriers shall be encapsulated;

s. Final Acceptance will be granted provided that items have been met to the satisfaction of the Owner’s Air Mentoring Consultant

t. Shutdown air filtration units (demobilization);

w. Remove the isolation barriers in conjunction with the use of vacuums;

x. After all Work and decontamination is complete, relocate and secure objects moved to temporary locations in the course of the Work to their former positions and assure that they are in working order.

END OF SECTION 02 08 00