

SECTION 02081
ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Remove all asbestos-containing materials (ACM) that will be impacted by the proposed renovation and at all areas that will be affected or impacted by the work in this Contract. All asbestos material is to be disposed of as ACM waste. The Asbestos Contractor shall provide all plant, labor, equipment and materials complete for performance of the Work in accordance with the Contract Documents.

1. Any materials not listed or addressed in the table in Part 4 of this Specification Section must be assumed to be asbestos-containing materials. The Contractor shall notify the Project Officer immediately if any materials that are not listed are encountered, who will then notify the Authority's Industrial Hygienist and Environmental Consultant. Work shall cease immediately and the work area vacated. Bulk sampling of this material will be conducted by the Authority's Environmental Consultant. Work shall not commence until the results of the bulk sample analysis has been provided in writing by the Authority's representative indicating that the material is non-asbestos. If bulk sampling indicates that the material is asbestos-containing, the Authority's Industrial Hygienist will provide procedures for the abatement of this material. This Work will be paid through a change order to the Contract. The change order will only address the difference between removing the material as asbestos containing and removing the material as non-asbestos containing.

2. Should the Contractor proceed to work without notifying the Authority of these untested materials encountered or other discrepancies, this will result in the Contractor being invoiced for the cost of the resulting environmental clean-up of the school and other associated costs, including, but not limited to, the relocation of students, disposal and replacement of contaminated perishable items and non-perishable items such as books, computers, rugs, etc. The Authority reserves the

right to utilize any of its certified "Requirements" Asbestos Contractors to conduct any such clean-up in an effort to provide a safe environment for the students and teachers.

- B. Material indicated by the table in Part 4 of this Section as ACM or assumed to be asbestos containing shall be treated and handled in accordance with this section. The Contractor may only remove assumed ACM as non-ACM if written approval has been received by the Authority indicating that the material is non-Asbestos.
1. For bidding purposes only, the removal of material indicated by the table as "Assumed ACM - to be tested during construction" shall follow paragraph 1.01A above, and shall be priced as if the material were non-ACM. Differences in costs shall be paid utilizing the Authority's change order process. No additional sums will be paid for their removal if the material is verified to be non-asbestos containing.
 2. The Contractor shall schedule the removal of all "Assumed ACM - to be tested during construction" indicated in Part 4 of this Section as if it were ACM to meet the Contract duration. Neither time extensions nor acceleration will be granted in any instances where assumed ACM is determined to be ACM.
 3. For both bidding and construction purposes, the removal of material indicated by the table as "Assumed ACM - Remove as ACM" must be removed as ACM per project contract documents. No testing will occur and the cost of ACM removal is to be included in the lump sum bid.
- C. The asbestos abatement contractor shall not proceed with asbestos abatement work in areas until the electrical contractor or GC provides an electrician with an Asbestos Handlers license to be in the restricted work area to ensure that safe conditions are in place.
- D. The abatement contractor shall have its supervisors hold and document a pre-abatement safety tool-box meeting, with project monitors, the Project Officer or his/her designee, and the GC to review safe work practices and emergency communication program for the project. The abatement contractor's supervisor and the Authority's Environmental Consultant's project monitor shall also

ensure proper fire extinguishing equipment is present, a competent person is knowledgeable in the use of fire extinguishing equipment, and emergency exit plans and phone numbers are posted in the immediate vicinity of work areas.

- E. The Authority's environmental consultant will sample all materials identified as assumed ACM in Part 4 of section 02081. The Contractor shall provide access to the consultant to perform the testing and no additional costs will be paid by the Authority for the time it takes to perform the testing.
- F. Perform the following abatement Work:
1. Sash Removal (Double Hung, Hopper, Casement, Awning, and Fixed Window Sashes):
 - a. Remove asbestos-containing window putty located on sashes of each window in the school as described in the Specification.
 2. Caulking Removal:
 - a. Remove asbestos-containing materials from building facades as described in this Specification.
(Perimeter caulking around windows or doors).
 3. Frame Removal:
 - a. Remove asbestos-containing window caulking in between window frames and window openings.
 4. Built-up Roof and Flashing Removal:
 - a. Remove asbestos-containing built-up roofing and flashing located on the roof of the school as described in this Specification.
 5. Asbestos Containing Materials including but not Limited to Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Material, etc. Removal:
 - a. Remove asbestos-containing materials in selected areas in the school.

Method #1: Remove asbestos-containing materials using full containment procedures

(large projects) as described in this specification.

Method #2: Remove asbestos-containing materials using "Tent Procedures".

6. Removal of ACM Caulking Materials, Asphaltic Mastic or Tar, Cement Siding or Shingles, and Paints from the Parapet and Exterior Wall(s):

- a. Remove asbestos-containing materials from the parapet walls and exterior walls as described in this Specification.

7. Intact Fire Door Removal:

- a. Remove asbestos-containing fire doors as described in this Specification.

Method #1: Remove asbestos-containing fire doors using full containment procedures (large projects) as described in this specification.

Method #2: Remove asbestos-containing fire doors using tent procedures as described in this specification.

Method #3: Remove asbestos-containing fire doors using Intact Removal Procedures.

8. Replacement of Thermal Insulation

- a. The Contractor shall be responsible for installing thermal insulation on all pipes, ducts, tanks, boilers or other equipment that are to remain in the work area and from which thermal insulation was removed.

- b. Replacement thermal insulation shall be approved by the Authority, and shall be new and asbestos-free materials.

- c. Replacement thermal insulation shall be installed in accordance with the terms and conditions of the following NYCSCA Standard

Specification Sections within Division 15 - Mechanical:

- 1) 15413 - Insulation (P&D)
 - 2) 15512 - Piping Insulation (HVAC)
 - 3) 15513 - Equipment Insulation (HVAC)
 - 4) 15514 - Ductwork Insulation
- d. Exposed thermal insulation edges that exist at the termination of asbestos abatement activities shall be sealed airtight with a wettable cloth or equivalent. An appropriate sealing compound shall be applied over the dry cloth to cover to create an airtight seal and to smooth rough edges.
 - e. Installation of replacement thermal insulation shall be performed following the conclusion of asbestos abatement activities, associated new work, if any, or at the direction of the Authority.
 - f. Following completion of replacement thermal insulation installation, a final completion walk-through inspection shall be conducted by the Contractor supervisor, NYCSCA representative and school custodial staff to evaluate the thermal insulation replacement.
9. Procedures for Installation of Electrical Conduits, Risers and Computer Power Source Equipment:
- a. Follow procedures as described in this specification for Installation Of Electrical Conduits, Risers and Computer Power Source Equipment.
- G. The Contractor shall field verify the amount of ACM and familiarize himself in all variable field conditions in the school in the School before the submission of their bid.
- H. ACM shall be properly handled, packaged, and transported for disposal in an asbestos-only landfill.
- I. All work shall be accomplished in strict adherence to the project Specification and Drawings, applicable Federal,

State, and Local Regulations. Whenever there is a conflict or overlap of the above references, the more stringent provision shall apply.

- J. The Contractor's industrial hygiene practices during asbestos abatement will be monitored by the Authority's Environmental Consultant. The Contractor shall be responsible for monitoring his own construction safety work practices for compliance with the OSHA regulations.
- K. The Asbestos Contractor shall provide the best available technology, and state-of-the-art procedures and methods of execution, clean-up, disposal, and safety.
- L. The Contractor will be required to obtain at his own expense appropriate variances from regulatory agencies as required to complete the safe removal of asbestos containing material as described in this specification.
- M. All moveable items such as furniture, cabinets, etc. within the work areas shall be relocated by the Contractor prior to initiating abatement activities.
- N. The abatement contractor will be responsible for any damage to the school and neighboring properties. This includes, but is not limited to damage to building components, vehicles, etc.
- O. An asbestos work permit authorizing the performance of construction work shall be required for asbestos projects involving one or more of the following:
 - 1. Obstruction of an exit door leading to an exit stair or the exterior of the building;
 - 2. Obstruction of an exterior fire escape or access to that fire escape;
 - 3. Obstruction of a fire-rated corridor leading to an Exit door;
 - 4. Removal of handrails in an exit stair or ramp;
 - 5. Removal or dismantling of any fire alarm system component including any fire alarm-initiating device (e.g., smoke detectors, manual pull station);

6. Removal or dismantling of any exit sign or any component of the exit lighting system, including photo luminescent exit path markings;
 7. Removal or dismantling of any part of a sprinkler system including piping or sprinkler heads;
 8. Removal or dismantling of any part of a standpipe system including fire pumps or valves;
 9. Any abatement activities to be performed within a building concurrently with the full demolition of such building or concurrently with the removal of one or more stories of such building.
 10. Any abatement activity that requires immediate construction work that would otherwise require permit from the Department of Buildings.
 11. Removal of any non-load bearing / non-fire-rated wall (greater than 45 square feet or 50 per cent of a given wall);
 12. Any plumbing work other than the repair or replacement of plumbing fixtures;
 13. Removal of any fire-resistance rated portions of a wall, ceiling, floor, door, corridor, partition, or structural element enclosure including spray-on fire- resistance rated materials;
 14. Removal of any fire damper, smoke damper, fire stopping material, fire blocking, or draft stopping within fire-resistance rated assemblies or within concealed spaces;
- P. For projects requiring an asbestos abatement permit due to one or more of the activities listed above in paragraph O.1 through O.10 above, the asbestos contractor shall submit, together with the asbestos project notification, a Work Place Safety Plan (WPSP) with an applicable fee and any other applicable abatement documents to the New York City Department of Environmental Protection. The design documents shall be prepared by a registered design professional.
- Q. For projects requiring an asbestos abatement permit due to one or more of the activities listed above in paragraphs O.11 through O.14 above, the asbestos contractor shall submit, together with the asbestos

project notification, all applicable asbestos abatement permit construction documents with applicable fee. The Contractor shall solely be responsible for filling the required variance applications, phasing, etc. and obtain a permit from the DEP for the project.

- R. Plan requirements. The WSPS shall include, but not be limited to, the following items, depending on the size and scope of the asbestos project:
1. Floor plans showing the locations of all asbestos project work areas in the building.
 2. Floor plans indicating the locations of any components of the fire alarm system which have been deactivated, and setting forth mitigation measures to be implemented for the duration of the project.
 3. Floor plans indicating the locations of obstructed or removed exit signage and lighting and setting forth mitigation measures to be implemented for the duration of the project.
 4. Floor plans indicating the locations of any obstructed means of egress or required exit and setting forth mitigation measures to be implemented for the duration of the project.
 5. Floor plans or riser diagrams indicating the locations of any disengaged or removed components of the fire protection system and setting forth mitigation measures to be undertaken for the duration of the project.
 6. A written description of all measures taken to mitigate compromised fire protection systems or means of egress, including but not limited to surveillance by a fire watch and an action plan setting forth procedures to be taken for the safety of building occupants in the event of an emergency.
 7. If the asbestos project is being performed in a building where any dwelling unit is to be occupied for the duration of the permit, the WSPS shall include a tenant protection plan as required by chapter 1 of Title 28 of the Administrative Code.
 8. A list of all non-asbestos contractors who will perform work on the project.

- S. For projects requiring an asbestos abatement permit, a final inspection shall be performed by a registered design professional after all work authorized by the permit is completed. The registered design professional shall note all failures to comply with the Building Code or approved asbestos abatement permit and shall promptly notify the Authority in writing.
- T. Provide scaffolding as necessary to accomplish the work of this contract. Scaffolding may be of standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions. Provide a nonskid surface on all scaffold surfaces subject to foot traffic. Follow Local Law 52 and obtain permit from the Building Department for any supported scaffold that is forty (40 feet) or more in height. The scaffolding design must be approved/sign-off by a professional engineer and approved by the SCA's safety unit.
- U. As per paragraph A.1 above, the Authority shall conduct a site assessment and sample all suspect materials. Results of the assessment inclusive of bulk sampling results will be forwarded to the Contractor.
1. It is the Contractor's sole responsibility to recognize all affected suspect ACM *and assumed ACM and remove the quantities indicated in Part 4 of 02081 necessary to complete the construction.*
 2. The Authority does not represent a position regarding the ease of removal of ACM from substrates. The Contractor shall be responsible for verification of existing site conditions and all costs associated with labor, materials, equipment and supplies relative to specified work. No additional compensation or Contract extensions shall be granted to the Contractor for failure to verify site conditions.
 3. The Contractor shall include in its Bid all costs associated with labor, materials, equipment and supplies for work associated with the abatement of asbestos containing materials not readily accessible, i.e., multiple layers of floor tile, mechanical insulation within chases and wall cavities, nailcrete, etc.

4. The Contractor shall provide the Authority's Environmental Consultant with all labor, equipment and materials, as necessary, to access suspect ACM and to obtain the necessary bulk samples.

1.02 PHASING OF WORK

- A. The Asbestos Contractor shall perform and complete the abatement activities of asbestos-containing materials during non-school hours. No abatement operations will be allowed when teachers or students are in the building. It is the Contractor's responsibility to ensure that all work including successful air clearance testing and analysis, as required, is completed prior to the return of building occupants.
- B. The General Contractor shall provide a detailed scope of work and plans showing the limits of work areas to the Environmental Consultant retained by the SCA and request for an ACP-5 Form in order to receive partial permit from the Department of Buildings for project areas where abatement is not required.

1.03 AUTHORITY TO STOP WORK

- A. The Authority's representative and the Authority's Environmental Consultant shall have the authority to stop the abatement work at any time a determination is made that conditions are not within Specification and applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of the Authority's representative and Authority's Environmental Consultant. Standby time to resolve the problems shall be at the Contractor's expense.

1.04 SITE REQUIREMENTS

- A. Noise Control: Provide mufflers on all equipment to be used by the Contractor. Observe local laws regarding noise control.
- B. Wastewater: All water used by the Contractor during asbestos abatement activities shall be collected and passed through a water filtration system capable of filtering particles down to 5 microns prior to being discharged into the sanitary sewer. The Contractor shall contact the Building Superintendent to determine the acceptable location(s) to access the sanitary sewer. The Contractor shall be responsible for connection to the

sanitary sewer, and for providing piping, pumps, water filtration systems, and other items necessary to collect, transport, filter, and dispose of the wastewater.

C. The Contractor must maintain a copy of the following information at the work place:

1. A copy of the U.S. Environmental Protection Agency Regulations for Asbestos, 40 CFR 61 Subparts A and M and a copy of OSHA Asbestos Regulations, 29 CFR 1926.1101, and 12 NYCRR Part 56.
2. A list of telephone numbers for local hospital, location of hospital and/or emergency squad, local fire department, the building owner (or representative) and the N.Y.C. Asbestos Control Program.
3. A copy of these Rules, the most recent Asbestos Abatement Notice (Form ACP-7), permits, any variance application (Form ACP-9) and DEP approval thereof.
4. A copy of all Material Safety Data Sheets (MSDS) for chemicals used during the asbestos project.
5. New York City Asbestos handler and supervisor certificates of all workers in the work site.
6. A copy of the current New York State Department of Labor asbestos handling license of the abatement contractor and air monitoring company.
7. A copy of any asbestos survey performed in the affected building in accordance with 12 NYCRR Part 56.

1.05 HEALTH AND SAFETY

- A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the air supplied to respirators, or from toxic or damaging vapors or residues resulting from the use of encapsulant and/or wetting agents or other substances used by the Contractor during construction.
- B. Chemical/Biological Hazards: The known chemical/biological hazards on site include asbestos-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to

ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.

- C. Physical Hazards: The Contractor shall provide safety equipment and training to his workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.
- D. Safety Act: The Williams-Steiger Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, materialmen, and subcontractors, and of visitors to the project site.
- E. Accident Prevention: In order to protect the lives and health of his employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Authority, and a copy of the Contractor's report to his insurer of an accident must be provided to the Authority.
- F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.
- G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.
- H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special

instruction or authorization from the Authority or the Engineer, is hereby permitted to act at his discretion.

- I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages may add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.06 WORK SUPERVISION AND COORDINATION

- A. Abatement Contractor's Supervisor: From the start of work through to the project completion, the Contractor shall have on-site a responsible and competent supervisor who possesses valid NYSDOL and NYCDEP Supervisor certifications. As a minimum, the Asbestos Contractor's Supervisor shall meet the qualifications as required by Article 1.12, for a job supervisor. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.
- B. Quality of Work: The Supervisor shall supervise, inspect and direct the Work competently and efficiently, devoting such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.07 SUBMITTALS

- A. Pre-Project Submittal:
1. Provide Certificates of Insurance naming the Authority, Department of Education, and the City of New York as additional insured.
 2. Health and Safety Plan: Provide a written Health and Safety Plan addressing procedures for work

place safety. As a minimum, the following topics shall be addressed in the plan:

- a. Hazard Communication. Procedure on how physical and health hazards associated with the WORK are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.
 - b. Guidelines for assessment and prevention of heat stress.
 - c. Procedures for using ladders safely.
 - d. Electrical safety procedures.
3. Emergency Action Plan: Provide a written Emergency Action Plan that outlines the contingency actions to be performed for emergencies including fire, accident, power failure, supplied air system failure, breach of work area containment, unexpected asbestos contamination in the site area and on the adjoining grounds, or spilling of asbestos material being hauled to storage and/or disposal. This Plan shall identify the manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of this Section). This Plan shall be readily available for review by all workers.
 4. Fall Protection Plan: Provide a written Fall Protection Plan that outlines the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.
 5. Provide proof of written notifications required by the Paragraph "Permits, State Licenses and Notifications" of this Section. Provide proof that

all required permits and variances have been obtained.

6. Provide documentation of compliance with all requirements of the paragraph "Requirements and Qualifications" of this Section. Submittal shall include:
 - a. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.
 - b. Proof of a current medical surveillance program for all Contractor's personnel to work on this project.
7. Provide proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.
8. Provide proof of historic airborne fiber data for similar types of project. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1) date of measurement; 2) type of work task monitored; 3) methods used for sample collection and analysis, and; 4) number, duration and results of samples taken.
9. Provide proof that a landfill site has been located, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials have been made. Provide the name and location of the landfill, and waste transport company, if applicable. Landfill shall be an asbestos-only receptor.
10. Provide manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Material Safety Data Sheets (MSDS) for encapsulant, fire retardant plastics, and other chemicals to be used on this project.
11. Provide a detailed Asbestos Removal and Disposal Work Plan that describes all aspects of the work to be performed for this project. The Plan shall include a detailed description of the work area enclosure. Provide shop drawings (with dimensions

and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; and 2) proposed layout and location of the decontamination enclosure systems. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.

12. Provide a sample of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval no later than seven days prior to the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.
2. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator that acknowledge the Contractor's delivery(s) of material, shall be submitted within thirty (30) days following removal of ACM from building.

C. Post Project Submittal:

1. A copy of the bound logbook.
2. Compilation in chronological order of all OSHA personal air monitoring records pertaining to this project.
3. Compilation of all completed and signed Waste Shipment Record forms, bills of lading, or disposal receipts pertaining to this project.
4. Copies of notifications and checks to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.
5. Copies of the workers' licenses (NYS DOL and NYC DEP) that actually performed the work on the Project.

1.08 FIRE PROTECTION AND EMERGENCY EGRESS

- A. The Contractor shall be responsible to the security and safeguarding of all areas turned over by the Authority to the Contractor. The Contractor shall designate to his workers and other building occupants the means of egress in case of emergency.
- B. The Contractor shall established emergency and fire exits from the work area. First aid kit, 2 full sets of protective clothing and respirators shall be provided for use by qualified emergency personnel in the clean room of the decontamination facility.
- C. The Contractor shall provide fire watch and logbook throughout the entire term of the project, to protect against fire and unauthorized entry into and around the work area. Any intrusion or incident shall be documented in the log book. Fire watch personnel shall be present during off-hours shift such as night shift, weekends and holidays when abatement work is not in progress. Fire watch shall be a certified asbestos handler by NYS and NYCDEP and possess a NYC Fire Department Certificate of Fitness.
- D. Notify the local police department and fire department that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and drawings indicating the areas to undergo abatement.
- E. Exit signs must be maintained during the abatement. In the case the exit signs will be blocked during the abatement, temporary exit signs shall be installed in accordance with 2008 NYC Building Code requirements. Exit signs and egress shall comply with code section BC 1026.
 - 1. Temporary exit signs shall be installed in primary and secondary egress paths.
 - 2. Signs must be either battery back-up or illuminated in accordance with 2008 NYC Building Code.
 - 3. Existing signs with incorrect directional arrows within the work area relative to primary and secondary egress paths shall be either blocked with solid barrier or be temporarily removed during work. Following the work completion, any signs removed must be reinstalled.

- F. Cutting tools must be available for emergency egress at all locations where exit doors and corridors will be blocked with plastic during the abatement.
- G. The existing sprinkler system in the building shall be operational and shall conform to code sections BC 302, 304, & 602.
- J. Emergency and fire exit staircase doors shall comply with BC 1008 and BC 1017.2 requirements.
- K. Spaces around wall and floor penetrations shall meet code section BC 712 requirements:
 - 1. Space around pipe, conduit and duct penetrations in floor slabs shall not exceed 1/2" and shall be filled with approved firestop material.
 - 2. Space around pipe, conduit and duct penetrations in walls shall not exceed 1/2" and shall be packed with mineral wool or other approved material and covered with metal escutcheons on both sides of the partition.
- L. For work areas greater than 15000 square feet, install a negative air cut-off switch as per section 1-91 (f) of the DEP regulations.

1.09 CLEAN-UP

- A. Asbestos Related Clean-up: All clean-up work related to asbestos abatement work shall be in strict accordance with general technical requirements.
- B. Final Site Cleaning: Upon completion of the work, the Contractor shall remove all temporary construction, decontamination facilities, and unused materials placed on site by the Contractor; put the premises in a neat and clean condition; and sweeping, cleaning, and washing required to restore the condition of the site to its original condition.

1.10 CODES, PERMITS, AND STANDARDS

- A. The Contractor shall be solely responsible for compliance with all applicable federal, state, and local laws, ordinances, codes, rules, and regulations that govern asbestos abatement Work or hauling and disposal of asbestos waste material. The current issue of each

document shall govern. All Work installed shall comply with all applicable codes and regulations as amended.

- B. Before starting the Work, the Contractor shall examine the Technical Specification for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to the Authority's Environmental Consultant.
- C. Where conflict among requirements or with these Specifications exists, the more stringent requirements shall apply.
- D. Permits, State Licenses, and Notifications: The Contractor shall be responsible for obtaining necessary permits, variances, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses, permits, and notifications shall be paid by the Contractor. Contractor shall use all notification forms where applicable.
 - 1. Agency Notification: At least 10 days prior to commencement of any asbestos removal, the Contractor shall prepare written notification to EPA Region 2, to the New York State Department of Labor (NYSDOL), and to the New York City Department of Environmental Protection (NYCDEP) Asbestos Control Program and all other applicable agencies having jurisdiction. In addition, the Contractor shall be required to obtain School Opening Permits (Custodial) for work covered under this specification including permits required for air sampling.

1.11 TERMINOLOGY

The following commonly-used terms are defined in the context of these Specifications:

- A. Abatement: Procedures to control or decrease fiber release from asbestos-containing building materials or insulation material containing asbestos. Includes removal, enclosure, and encapsulation.
- B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.

- C. Aggressive Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.
- D. Air Filtration Device (AFD) - A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.
- E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.
- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos project: Asbestos project shall mean any form of work performed in a building or structure or in connection with the replacement or repair of equipment, pipes, or electrical equipment not located in a building or structure which will disturb (e.g., remove, enclose, encapsulate) more than 25 linear feet or more than 10 square feet of asbestos-containing material.
- I. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.
- J. Authorized Visitor: Authority's Environmental Consultant or representatives of any regulatory or other agency having jurisdiction over the project.
- K. Authority shall be the New York City Construction Authority, its agents, servants, employees, or designees as the case maybe.
- L. Authority's Environmental Consultant: The Authority's agent who is authorized to exercise general contract

administration and industrial hygiene inspection of the work under the direction of the Authority.

- M. Building materials: Building materials shall mean any and all materials listed as Presumed Asbestos Containing Materials (PACM) and Suspect Miscellaneous ACM in NYSDOL ICR 56, including but not limited to interior and exterior finishes, equipment, plaster, roofing, flooring, caulking, sealants, tiles, insulation, and mortar and refractory bricks used in the construction of boilers.
- N. Certified Industrial Hygienist (CIH): One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
- O. Class II asbestos work: Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Class I asbestos work includes the removal of thermal system or surfacing materials.
- P. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101(b) and as outlined herein.
- Q. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- R. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).
- S. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.
- T. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

- U. Encapsulation: Application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.
- V. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.
- W. Excursion Limit (EL): The EL is an airborne concentration of asbestos to which no employee shall be exposed when not using respiratory protection. The EL is 1.0 f/cc as averaged over a 30 minute period.
- X. Exit: Portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction to provide a protected path of egress travel between the exit access and the exit discharge.
- Y. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- Z. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.
- AA. Full Facepiece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.
- AB. Half Mask High Efficiency Respirator (HMHER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.
- AC. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.
- AD. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.
- AE. Large Asbestos Project: Large asbestos project shall mean an asbestos project involving the disturbance (e.g. removal, enclosure, encapsulation) of 260 linear feet or more of friable asbestos-containing material or 160 square feet or more of friable asbestos-containing material.

- AF. Lockdown: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.
- AG. Log: Log shall mean an official record, maintained by the abatement contractor, of all activities that occurred during the project. At a minimum, the log shall identify the building owner, agent, contractor, and workers, and other pertinent information including daily activities, cleanings and waste transfers, names and certificate numbers of asbestos handler supervisors and asbestos handlers; results of inspections of decontamination systems, barriers, and negative pressure ventilation equipment; summary of corrective actions and repairs; work stoppages with reason for stoppage; manometer readings at least twice per work shift; daily checks of emergency and fire exits and any unusual events.
- AH. Minor Asbestos Project: Minor project shall mean a project involving the disturbance (e.g. removal, enclosure, encapsulation, repair) of 25 linear feet or less of friable asbestos-containing material or 10 square feet or less of friable asbestos-containing material.
- AI. Monitor Representative: Authority's Third Party Monitor who is authorized to perform industrial hygiene inspection of the work.
- AJ. Movable Object: A unit of equipment or furniture which can be removed from the work area.
- AK. Obstruction: Obstruction shall mean the blocking of a means of egress with any temporary structure or barrier. Polyethylene sheeting shall not be considered an obstruction when it is prominently marked with exit signage or paint and cutting tools (knife, razor) are attached to the work area side of the sheeting for use in the event that the sheeting must be cut to permit egress. A corridor shall not be considered obstructed when there is a clear path measuring at least three (3) feet wide.
- AL. Plasticize: To cover floors and walls with plastic sheeting as herein specified.
- AM. Permissible Exposure Limit (PEL): The PEL is an airborne concentration of ACM to which no employee shall be exposed when not using respiratory protection. The OSHA

PEL is 0.1 f/cc expressed on an 8-hour time weighted average (TWA).

- AN. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.
- AO. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.
- AP. Regulated area: An area established by the employer to demarcate areas where Class I, II and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.
- AQ. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.
- AR. Small Asbestos Project: Small asbestos project shall mean an asbestos project involving the disturbance (e.g. removal, enclosure, encapsulation) of more than 25 and less than 260 linear feet of friable asbestos-containing material or more than 10 and less than 160 square feet of friable asbestos-containing material.
- AS. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- AT. Tent Procedure: A method of limited application for the removal at any one time of less than 260 linear feet or 160 square feet of ACM. Tent procedures shall be accomplished in a constructed or commercially available plastic tent, plasticizing and sealing all surfaces not being abated within the periphery forming an enclosure. The tent shall be of 2 layers of 6-mil plastic at a minimum, with seams stapled and taped airtight and then taped flush with the adjacent tent wall. Engineering

control shall include a HEPA unit to continuously exhaust the work area. Negative air shall be demonstrated by smoke test.

- AU. Type C Respirator: A respirator which supplies air to the wearer from a source outside the work area by means of a compressor.
- AV. 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 amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- AW. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with an airlock entrance or a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.
- AX. Work place safety plan: Work place safety plan shall mean documents prepared by a registered design professional and submitted for review by DEP in order to obtain an asbestos abatement permit. Such plan shall include, but not be limited to, plans, sections, and details of the work area clearly showing the extent, sequence, and means and methods by which the work is to be performed.

1.12 REQUIREMENTS AND QUALIFICATIONS

- A. Minimum Experience: The Contractor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.
- B. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All personnel engaged in asbestos abatement or related activities shall have both New York State DOL and NYC DEP certifications. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Authority. Improperly trained, untrained, or inexperienced personnel shall not

be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.

1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the NYSDOH-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as a NYCDEP and NYSDOL-certified Contractor/Supervisor. Course must be provided by an NYSDOH-approved training provider. The supervisor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.
 2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.
 3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101(k)(3). Course must be provided by an NYSDOH-approved training provider.
 4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the NYCDEP and NYSDOL.
 5. Prior to commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- C. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.

1. The Contractor shall have a NYSDOL and NYCDEP job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a qualified and certified supervisor, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. The Authority's Designated Representative shall be informed of the substitution. The supervisor must be familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.
- D. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n) (3).
- E. Certificate of Worker's Release: Each asbestos abatement worker, workers of other trades, or any supervisory personnel who enter the work area, or otherwise contact ACM, shall submit a Certificate of Worker's Release, as required in the Section "Submittal".

1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES

- A. Visual inspections and air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations as defined in this specification. For window sash abatement projects utilizing approved NYCDEP protocol, no area monitoring is required provided that all OSHA results are below 0.01 f/cc.
- B. The Authority's Responsibilities:
 1. The Authority will employ an industrial hygiene (IH) testing laboratory for air monitoring and clearance testing.
 2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift from the work area as required at the decontamination enclosure clean room, and in adjacent non-work areas.

3. Clearance testing by Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM) will be performed at the written request of the Contractor submitted on a copy of the "Request for Services" form. Air samples will be collected to demonstrate final reoccupancy clearance for work areas within the building. The fiber concentration of each sample must comply with the specified clearance level. The Authority will provide for collection and analysis of one round of samples required to demonstrate clearance in each discrete work area. For the removal of window sash with putty intact, post abatement clearance air monitoring by Phase Contrast Microscopy shall be performed if any individual (not TWA) OSHA samples exceed 0.01 f/cc.
4. The Authority's Environmental Consultant will perform inspections of the work area, as specified, upon written request of the Contractor. Submit request on a copy of the "Request for Services" form.
5. The Authority's Environmental Consultant will submit copies of all results to the Contractor, the school, and the Authority and issue a letter to the school that areas are safe to reoccupy.

C. Contractor's Responsibilities:

1. At the beginning of the Project, the Contractor shall provide the Authority's representative with a schedule of the proposed abatement. Once the Authority, assigns an Environmental Consultant, the Contractor shall be responsible for coordinating its activities with the Environmental Consultant and shall make all notifications of the removal schedule to applicable agencies and the Environmental Consultant within the specified time frame required by the regulatory requirements and as specified herein.
2. PCM and TEM air samples that fail to meet the reoccupancy clearance standard shall be paid for by the Contractor. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as PCM and TEM analysis, and air testing, shall be the responsibility of the asbestos contractor.

3. The Contractor, at his expense, shall provide OSHA monitoring and all other all tests required by specified applicable regulations, codes, and standards and any other tests for his use. The use of a testing laboratory by the Authority does not release the Contractor from providing tests required for the protection and safety of his employees.
4. The Contractor shall employ an independent IH testing laboratory for collection and analysis of (OSHA) personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos." The monitoring shall be supervised by an Industrial Hygienist certified by the American Board of Industrial Hygiene (A.B.I.H.). Each testing laboratory shall be ELAP and NVLAP certified.
5. From each work area, the Contractor, at his expense, shall collect and analyze (OSHA) personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101, Appendix A.
6. If readings are above 0.01 f/cc, the area must be recleaned and ambient air monitoring shall be conducted by the Authority's Environmental Consultant.
7. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his best efforts to resolve any such questions to the satisfaction of the Authority's Environmental Consultant.
8. Where air monitoring tests and/or inspections are specified or required, the Contractor shall notify the Authority's Environmental Consultant, in writing, in advance of the required test and/or inspection.
9. The Contractor is responsible for ensuring the Work is complete to the level that meets the criteria of

the inspection. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Authority's Environmental Consultant.

- D. Time Requirements for Authority's Environmental Consultant's Inspections and Testing: Where visual inspections or air testing is required to be performed by the Authority's Environmental Consultant, the Contractor shall allow for the following response/analytical time for completion of the inspection/test.
1. Where visual inspections are required, allow 24 hours beginning from the time the Contractor's written request is received by the Authority's Environmental Consultant, for the performance of the inspection.
 2. Where PCM and TEM clearance air monitoring tests are required, allow 24 hours beginning from the time the Contractor's written request is received by the Authority's Environmental Consultant, to the beginning of the air test.
 3. Where air-monitoring tests for sash removal are required, allow 24 hours beginning from the time the Contractor's written request is received by the Authority's Environmental Consultant, to the beginning of the air test.

1.14 SPECIAL REQUIREMENTS AND RESPONSIBILITIES

- A. The Contractor must assume that all components in direct contact with concealed and exposed ACM/assumed ACM is contaminated and is to be disposed of as ACM-contaminated waste. This shall include, but not limited to, brick, mortar, window frames, sashes, doorframes, etc. In lieu of disposing of these materials such, the contractor may opt to decontaminate these components and dispose of them as regular C&D waste, at no additional cost to the Authority provided that these materials are Non-Porous.
- B. The Contractor shall provide all material, manpower and equipment to access all assumed ACM materials for sampling by the Authority's Environmental Consultant at no additional cost to the Authority. Materials deemed to be non-ACM through bulk sample analysis conducted by the Authority's Environmental Consultant, shall be credited to the Authority.

- C. Radiators to be impacted by the work must be assumed to have concealed ACM associated with them. Thus, any dismantling or removal of these radiators must be conducted exclusively by the asbestos contractor, cautiously and under controlled conditions, within full containment/tents, in the presence of the Authority's Environmental Consultant, at no additional cost to the Authority.
- D. All selective demolition into inaccessible spaces must be conducted exclusively by the asbestos abatement contractor, under controlled conditions, within tents or full containments, in the presence of the Authority's Environmental Consultant.
- E. All caulk and putty (concealed and exposed) must be assumed to be PCB-containing, unless otherwise indicated in section 02082. Contractor must refer to section 02082 for additional handling and disposal requirements. Paint must be assumed to be LBP as per sections S01900 and 02085.
- F. Any suspect material not listed or addressed in this specification and would be impacted by the planned work activities must be assumed to be Asbestos-Containing Materials. The Contractor shall notify the Project Officer immediately if any materials that are not listed are encountered, who will then notify the Authority's Industrial Hygienist for directive.
- G. All selective demolition into inaccessible spaces (including but not limited to pipe chases, ceiling plenums, soffits, etc.) must be conducted exclusively by the Abatement Contractor in modified tents or in full containments under controlled conditions in the presence of the Authority's environmental consultant.
- H. Connections and Disconnection of electrical wiring in the vicinity of ACM/assumed ACM shall be performed by a Licensed Electrician with Asbestos Handlers Certification.
- I. Protective metal jacket surroundig the pipe insulation risers and horizontal runs which would be impacted by the scope of work must be removed by the abatement contractor under controlled condition within full containment or tent enclosures. This work must be performed as part of abatement in the presence of the Authority's environmental consultant.

- J. Unless otherwise specified in section 02081, the contractor shall assume the existence of concealed ACM vapor barrier flashing/tar materials between respective wythes of facade walls and factor this into his/her bid estimate. Any impact on ACM vapor barrier flashing/tar materials must be addressed following proper abatement procedures.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.
- B. Plastic: Provide fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for plasticizing the enclosed work area, for preparation of the decontamination enclosure system, and for waste packaging.
- C. Reinforced Fire Retardant Plastic: Provide reinforced polyethylene sheet for the floor area of the decontamination enclosure system. Reinforced plastic sheet provided for this project shall be a 19 mil, 3-ply, high density flame resistant-reinforced-polyethylene sheet. Plastic color shall be opaque. Provide Griffolyn T-55 as manufactured by Reef Industries, Inc., Houston, Texas (1-800-231-6074), or equal.
- D. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water. When used on windows the tape shall be ultra violet light stable and shall not leave residue when removed. Nashua 357 Black Duct Tape shall be used for all window applications. This tape can be used for all applications relative to this project.

- E. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- F. Lockdown Encapsulants: Encapsulants used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.
- G. Caulking Sealant: Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufacturer's written instructions.
- H. Foam Sealant: Foam Sealant shall be expanding urethane Class 1 foam sealant with a Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -30°F and 250°F.
- I. Liquid Mastic Remover: Only soy-based liquid mastic removers shall be allowed. Mast-Away 99 or its equivalent may be utilized provided that strict adherence to the manufacturer's instructions and recommendations are followed.
- J. Plywood: Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.
- K. Spray Adhesive: Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).
- L. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be

provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.

- M.** Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.
- N.** Shipping Containers: Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- O.** Markings and Labels: Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).

- 1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD

- 2. DOT Marking and Labels: Markings and labels shall be permanently affixed to all bags and containers containing ACM, in accordance with DOT 49 CFR 172.304 and 172.407.

- a. Markings shall display the following text:

RQ, ASBESTOS, NA 2212

- b. Labels shall be diamond shape and shall be located near the Marking text. Labels will consist of a diamond a minimum of 100 millimeters (mm) on each side with each side

having a solid line inner boarder 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 172.446 for label format.

3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

GENERATOR'S NAME
 GENERATOR'S 24 HOUR PHONE
 GENERATOR'S FACILITY ADDRESS

- P. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

RESIDUE:
 LAST CONTAINED ASBESTOS RQ

- Q. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

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

- R. Acceptable Foam or Viscous Liquid:

1. Shall be non-toxic, and not require special respiratory protection for handling.
2. Shall coat and maintained a stable blanket (minimum 1" thickness) for the duration of the removal process.

3. Shall wet the ACRM and remain wet through the bagging process.
4. Shall leave an identifiable colored residue when it dissipates.
5. Shall not require special disposal.

2.02 EQUIPMENT

- A. General: Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.
- B. Communication Equipment: Devices suitable for inter-room communications, such as "walkie-talkies" or "radio band" communicators shall be provided.
- C. Spraying Equipment: Equipment used to apply amended water or removal encapsulant shall be of a low-pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.
- D. Vehicles: Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.
- E. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.
- F. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room.
- G. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector

in the decontamination enclosure clean room, and one in the work area.

- H. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.
- I. Carts: Provide watertight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged asbestos waste from the decontamination enclosure system to the waste storage container or transport vehicle.
- J. Power Tools: Provide power tools necessary to complete the Work. Power tools used directly for asbestos removal shall be equipped with a dust collection system. Attach a shroud connected to a HEPA vacuum system for capture of dust.
- K. Ground Fault Protection: Equip all circuits for any purpose entering the Work Area with ground fault circuit interrupters (GFCI). Locate GFCI's exterior to Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type GFCI equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, OSHA or other governing authority.
- L. Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single length or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- M. Lamps and Light Fixtures: Provide general service incandescent lamps, fluorescent lamps, or energy efficient LED lighting of wattage indicated or required for adequate illumination as required by the work or this section. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture.
- N. HEPA Filtered Fan and Vacuum Units: HEPA filtered fan and vacuum units shall be constructed of durable materials able to withstand damage from rough handling and transportation.

1. Provide units whose cabinets are factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance.
 2. Arranged to provide access to and replacement of all air filters from intake end.
 3. Unit shall be mounted on casters or wheels.
 4. Unit shall have a continuous rubber gasket located between the filter and the filter housing to form a tight seal.
 5. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 μm dioctylphthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL 586 label to indicate ability to perform under specified conditions.
 6. All air-filtration devices shall be equipped with new HEPA filters prior to beginning of the asbestos abatement activities. Units with used HEPA filters will not be permitted.
- O. Electrical Equipments and Sampling Supplies: Provide necessary electrical equipments and supplies to perform pre, during and post abatement air sampling including but not limited to cords, cables, and power with GFCI.

2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT

- A. General: Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101
- B. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.
 1. The Contractor shall provide authorized visitors and the Authority's Environmental Consultant suitable properly fitting protective disposable

clothing, headgear, hard hats, eye protection, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.

- C. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.
- D. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

| <u>Respirator Type</u> | <u>Protection Factor</u> |
|---|---------------------------------------|
| Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Half-facepiece | 10 |
| Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Full-Facepiece | 50 (quantitative) 10 (qualitative) |
| Powered air purifying (PAPR): Positive pressure respirator High efficiency HEPA filter, Full-facepiece | 100 |
| Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape | 1000 |
| Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece | 1000 |

HEPA escape

Type C supplied air: 1000
Pressure-demand,
Full-facepiece
equipped with an auxiliary SCBA

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
2. During the use of supplied air systems the Contractor shall provide authorized visitors, the Authority's Environmental Consultant, and the testing laboratory representative with individually issued and marked respiratory equipment (up to six units). Respiratory equipment shall be compatible with the supplied air system in use, and shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
3. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.
4. Breathing air supply systems shall conform to the USEPA NIOSH Document EPA-560-OPTS-86-001 (September 1986) entitled "A Guide to Respiratory Protection for the Asbestos Abatement Industry."
5. The Contractor shall have a minimum of two spare air hoses with connectors to permit the Authority's Environmental Consultant or testing laboratory's representative to connect his assigned Type C respirator to the air system at any time without having to wait for personnel to exit the work area in order to obtain a spare hose.

PART 3 - EXECUTION

3.01 DECONTAMINATION ENCLOSURE SYSTEMS

- A. Remote Decontamination Facility: Remote decontamination unit shall be constructed in accordance with OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein.
1. The decontamination enclosure system chambers shall be constructed to meet the criteria of the Specification. The decontamination enclosure shall be installed watertight to prevent water leaks. The interior shall be lined with two layers of 6-mil fire-retardant plastic sheeting, with a minimum overlap of 16 inches at seams and sealed (airtight) by tape and adhesive. The interior floor shall be sheathed with (2) layers of reinforced fire retardant plastic sheeting with a minimum overlap on the wall of sixteen (16) inches. Compliance with local building codes and other regulations governing temporary structures shall be ensured by the contractor.
 2. Curtained Doorways: Three overlapping sheets of 6-mil polyethylene shall be placed over a framed doorway and secured along the top of the doorway. Secure the vertical edge of the outer sheets along one vertical side of the doorway and the vertical edge of the center sheet along the opposite vertical side of the doorway. The sheets shall be weighted so that they close quickly after being released.
 3. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
 4. Personnel Decontamination Enclosure System: The decontamination enclosure system shall consist of, at least, a shower room and a clean room separated from each other by an airlock as follows:
 - a. Shower Room: The shower room shall have two common air locks: one which separates it from the tent and one which separates it from the clean room. The shower room shall contain at least one shower with hot and cold water adjustable at the tap for every six workers in containment. Careful attention shall be given to the shower to ensure against leaking of any kind. The Contractor shall supply shampoo and soap in the shower room at all times.

- b. Clean Room: The clean room shall share a common air lock with the shower room and shall have a curtained doorway. The clean room shall be sized to adequately accommodate the work crew. The clean room shall not be used for storage of tools, equipment, or materials or as office space.
- B. Full (five-room) Decontamination Facility: A full decontamination enclosure system for large asbestos projects shall be constructed in accordance with OSHA Standard 29 CFR 1926.1101, 12NYCRR Part 56 and as specified herein.
1. Structure: Use modular systems or build using wood or metal frame studs, joists, and rafters placed at a maximum of 24 inches on-center. Interior shall be sheathed with plywood caulked or taped airtight at joints and seams. Interior and exterior shall be lined with two layers of 6-mil plastic sheeting, with a minimum overlap of 16 inches at seams and sealed (airtight) by tape and adhesive. The interior floor shall be covered with two (2) layers of reinforced fire-retardant plastic sheeting with a minimum overlap on the walls of sixteen (16) inches.
 2. Curtained Doorways: Two overlapping sheets of 6-mil polyethylene shall be placed over a framed doorway and secured along the top of the doorway. Secure the vertical edge of the outer sheet along one vertical side of the doorway. The sheet shall be weighted so that they close quickly after being released.
 3. Air Locks: Air locks shall consist of two curtained doorways placed a minimum of three feet apart.
 4. Decontamination Enclosure System shall be placed adjacent to the work area and shall consist of three totally enclosed chambers, separated from work area and each other by airlocks, as follows:
 - a. Equipment Room: The equipment room shall have a curtain doorway to separate it from the work area, and share a common curtain doorway with the shower room. The equipment room shall be large enough to accommodate at least one worker (allowing them enough room to remove

their protective clothing and footwear), and a 6-mil disposal bag for collection of discarded clothing and equipment.

- b. Shower Room: The shower room shall have two curtain doorways: one which separates it from the equipment room and one which separates it from the clean room. The shower room shall contain at least one shower, with hot and cold water, per six workers. Careful attention shall be given to the shower to ensure against leaking of any kind. The Contractor shall supply shampoo and soap in the shower room at all times.
 - c. Clean Room: The clean room shall share a common curtain doorway with the shower room and shall have a curtained doorway to separate it from outside non-contaminated areas. Lockable lockers for storage of workers' street clothing and shelves for storing respirators shall be provided in this area. Clean disposable clothing, replacement filters for respirators, clean dry towels, and other necessary items shall also be provided in the clean room.
5. Waste/Equipment Decontamination Enclosure System: This system is located adjacent to the work area and personnel decontamination system. The equipment decontamination enclosure system, consisting of two totally enclosed spaces, shall be constructed as follows:
- a. Equipment Washroom: An equipment washroom shall have two air locks: one adjacent to the work area and one common air lock that separates it from the holding area. The washroom shall have facilities for washing material containers and equipment. Gross removal of dust and debris from contaminated material containers and equipment shall be accomplished in the work area, prior to moving to the washroom.
 - b. Holding Area: A holding area shall share a common air lock with the equipment washroom and shall have a curtained doorway to outside areas. A hinged, lockable door shall be

placed at the holding area entrance to prevent unauthorized access into the work area.

- C. Decontamination Enclosure System Utilities: Lighting, heat, and electricity shall be provided as necessary by the Contractor, and as specified herein.

3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES

- A. General: The Contractor shall take all safety measures and precautions necessary to protect his employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements. Table 3.1 below summarizes the minimum levels of personnel protection required during work of this Section.

1. Workers shall be fully protected with respirators and protective clothing from the time of first disturbance of asbestos-containing or asbestos-contaminated materials prior to commencing actual asbestos abatement until final cleanup is completed.
2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).
3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.

TABLE 3.1

MINIMUM PERSONAL PROTECTION REQUIREMENTS^a

| ACTIVITY | RESPIRATORY PROTECTION | DISPOSABLE CLOTHING | SHOWER REQUIRED AFTER WORK | DECONTAMINATION UNIT |
|--|------------------------|---------------------|----------------------------|----------------------|
| 1. Removal of "loose items" prior to work - no potential asbestos exposure | None | No | No | No |
| 2. Removal of "loose items" prior to work - potential asbestos exposure | HMHER | Yes | Yes | Yes |
| 3. Precleaning prior to abatement | HMHER | Yes | Yes | Yes |
| 4. Sealing openings prior to abatement no potential asbestos exposure | HMHER | Yes | Yes | Yes |
| 5. Plasticizing prior to abatement - | HMHER | Yes | Yes | Yes |

| | | | | | |
|-----|--|-------|-----|-----|-----|
| | no potential asbestos exposure | | | | |
| 6. | Plasticizing prior to abatement - potential asbestos exposure | HMHER | Yes | Yes | Yes |
| 7. | Gross removal (Uncontained work area) | HMHER | Yes | Yes | Yes |
| 8. | Gross removal (Contained work area) | PAPR | Yes | Yes | Yes |
| 9. | Preliminary cleanup (after gross removal) | HMHER | Yes | Yes | Yes |
| 10. | Plastic removal after initial clearance | HMHER | Yes | Yes | Yes |
| 11. | Lockdown | HMHER | Yes | Yes | Yes |
| 12. | Cleaning and plastic removal after lockdown before final clearance | HMHER | Yes | Yes | Yes |
| 13. | Activities after final clearance | None | No | No | No |
| 14. | Loading ACM on truck outside | HMHER | Yes | No | No |

- a. These are minimum requirements only. The Contractor is fully responsible for the personal protection of all workers at the site. Where conflict or interpretational differences arise, the text of the Specification shall apply.

PAPR Full face mask powered air purifying respirator.
 HMHER Half face mask high efficiency respirator.
 FFHER Full face mask high efficiency respirator.

4. Except for government inspectors with jurisdiction, no visitors except those authorized by the Authority shall be allowed in work area.

5. Asbestos workers shall not wear any jewelry; e.g. watch, necklace, etc. while in the work area or decontamination area.

- B. Worker Respiratory Protection: With approval from the Authority's Environmental Consultant, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on personal air monitoring of the "breathing zone" of his employees for other asbestos abatement projects, and the data were obtained during work operations conducted under work place conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Authority's Environmental Consultant for review of applicability. (See "Submittal, Pre-Project Information." This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may provide respirators as presented in the Specification.

1. Review material safety data sheets (MSDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.
2. Personal Air Monitoring Requirements: The Contractor's CIH monitor shall be responsible for development and implementation of a personal air-monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein for gross removal and/or glove bag-tent removal. Personal air monitoring may be performed by an IH monitor supervised by the Contractor's CIH. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any typical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantitation"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.
3. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TLV-TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees, at least one sample per eight-man crew) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to determine the Excursion Limit. Personal exposure sampling shall

be repeated everyday as per protocol requirements where removal and cleanup operations are conducted for the duration of the project, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the OSHA Reference Method in OSHA Standard 29 CFR 1926.1101, Appendix B.

C. Personnel Entrance and Decontamination Procedures for Removal Operations utilizing remote decon: The following entry/exit procedures shall be used for removal work areas.

1. All individuals who enter the Work Area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each Work Area, and worker respiratory protection employed. The job supervisor shall be responsible for the maintenance of the log during the abatement activity.
2. Each worker shall remove street clothes in the clean room; wear two disposable suits, including gloves, hoods and non-skid footwear; and put on a clean respirator (with new filters) before entering the work area.
3. Each worker shall, before leaving the work area or tent, shall clean the outside of the respirators and outer protective clothing by wet cleaning and/or hepa vacuuming. The outer disposable suit shall be removed in the work area and the worker shall then proceed to the shower room. The inner disposable suit and respirator shall be wet wiped and HEPA vacuumed thoroughly before removing and prior to aggressive shower.
4. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately.

D. Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing Full Decontamination Facility: The following entry/exit procedures shall be used for gross removal using full containment.

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
2. All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.
3. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.
4. Each worker or authorized visitor shall, each time he leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
5. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.03 PREPARATION OF WORK AREA

The following Paragraph "General Preparations" outlines procedures applicable to all work areas. Work procedures specific for preparing each asbestos removal area is addressed in its respective Subparagraph.

- A. Prior to the start of abatement activities, the Authority's Abatement Contractor shall provide notification to all occupants of the work place and

immediate adjacent areas of the asbestos project, as well as posting the abatement notices for the school occupants where school announcements are posted (or if not available, on a wall adjacent to the General Office). Information provided in the notification shall include contractor, project location and size, amount and type of ACM, abatement procedure, dates of expected occurrence. 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. The notice shall have the following heading: NOTICE OF ASBESTOS ABATEMENT, 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.

- B. 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 required under section 1-91(f) of Title 15, Chapter 1 requirements, if applicable.
- C. General Procedures for Gross Removal of Asbestos Containing Materials including but not limited to Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Material, etc. Using Full Containment Procedures: The Contractor shall perform the following general and gross area preparations for each work area to undergo gross removal using full containment.
 - 1. Request that the Authority's Environmental Consultant perform area monitoring and establish a background count prior to the preparatory operations for each removal area.
 - 2. Erect barricades; post notices and warning signs.
 - 3. Shut down, isolate, and lock out or tag Heating, Ventilating, and Air Conditioning (HVAC) systems that serve or which pass through the work area. Vents within the work area and seams in HVAC components shall be sealed with tape and two layers of plastic sheeting. Filters in HVAC systems shall be removed and treated as asbestos-contaminated waste.

4. Shut down, disconnect, and lock out or tag all electric power to the work area so that there is no possibility of its reactivation until after clearance testing of the work area.
5. No smoking signs shall be maintained and prominently displayed within the work place. The sign shall be a minimum of 10 by 14 inches and shall bear the International "No Smoking" symbol, under the work "NO SMOKING" shall be printed in minimum 2" letter size.
6. Provide and install decontamination enclosure systems in accordance with Article 3.01 (B), "Decontamination Enclosure Systems". Prior to installation of decontamination enclosure system, the floor area shall be covered with one layer of 6-mil plastic sheeting and then 1/2 inch rigid flooring prior to normal decon construction. This procedure (when required) is necessary to protect the existing carpet from being contaminated.
7. Seal floor drains, sumps and other collection devices with two layers of 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
8. Ensure that the Contractor's communication equipment is in place, in operating condition, and in operation during work described in this Section.
9. Ensure that the Contractor's approved Fall Protection Equipment is in place, in operating condition, and in operation during work described in this section.
10. Separate by means of airtight barriers (isolation barriers) parts of the building that are not included in the work area(s) from parts of the building that will undergo asbestos abatement.
11. Seal with isolation barriers all open doorways, cased openings, and corridors which will not be used for passage during work. Any opening equal to or more than 32 square feet shall be sealed with solid isolation barriers.

12. When elevators are running through the work area, the elevator door in the work area shall be enclosed with conventional 2 x 4 stud framing, covered with 3/8" plywood sheathing and sealed at all edges and seams. The barrier shall be covered and lapped for eight (8) inches with two layers of 6-mil fire retardant plastic adhered individually with edges taped for air tightness. Elevators that remain on operation shall be to bypass the work area.
13. Isolation barriers shall extend from the floor to the drop ceiling and form an airtight seal. They shall be built using wood or metal framing at 24-inch on-center faced with plywood sheathing, and shall be braced as necessary. Both sides of the isolation barrier shall be covered with a double layer of 6-mil plastic sheeting, with joints staggered and sealed with tape. Edges of the temporary partition at the floor, walls, and ceiling shall be taped and caulked airtight. Isolation barriers larger than 32 square feet shall be sheathed on the work area side with 3/8 inch plywood sheathing.
14. Completely seal airtight and isolate the work area. All openings, including but not limited to doorways, windows, tunnels, ducts, grilles, cracks, diffusers, openings through which pipe conduit passes, and any other penetrations of the work area, shall be covered with plastic sheeting taped or caulked airtight.
15. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with fluorescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
16. Where the opening is an exit covered plastic, or where a partition would block egress, the partition shall consist of two sheets of fire-retardant 6-mil plastic, prominently marked as an exit with

photoluminescent paint or signage. Cutting tools (e.g., knife, razor) shall be attached to the work area side of the sheeting for use in the event that the barrier must be cut open to allow egress.

17. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.
18. After sealing and plasticizing the area, install and initiate operation of air filtration devices to provide a negative pressure of at least -0.02 inches of water and four (4) changes per hour within the work area relative to surrounding non-work areas. Do not shut down AFD's until the work area is released to the Owner following final clearance procedures.
19. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped with HEPA filtered local exhaust ventilation.
20. Scaffolds shall be provided for workers engaged in work that cannot safely be performed from the ground or other solid work area surface.
21. Work Area Precleaning Procedures: After establishing the decontamination enclosure systems, prepare and preclean the work area as specified below and as indicated by the drawing notes:
 - a. Movable and loose items not removed by the Authority from work areas shall be cleaned using HEPA vacuum equipment and/or wet cleaning methods as appropriate and shall be removed from the work area and stored at the Owner's direction.
 - b. Movable and loose items contaminated with asbestos shall be removed from the work areas and properly discarded as asbestos-contaminated waste.
 - c. 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. Fixed objects shall include, but not be limited to, light fixtures, junction boxes, hangers and black carrying channels.

- d. 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. Carpeting in all work areas will remain in place. It shall be covered with one layer of 6-mil plastic sheeting and than 1/2 inches of rigid flooring prior to normal plasticizing.
22. Plasticize the area after precleaning, using the following procedure:
 - a. Cover floor with one layer of 6-mil plastic sheet, turning layer a minimum of 12 inches up wall, and seal layer to wall.
 - b. Cover walls with one layer of 6-mil plastic sheet, lapping wall layer a minimum of 12 inches, and seal layer to floor layer.
 - c. Repeat procedure for second layer. All joints in plastic sheets shall be glued and taped in such a manner as to prohibit air passage. Joints on plastic layers shall be staggered to reduce the potential for water to penetrate.
 23. Suspended ceiling tiles and T-grid components shall remain in place until the preparation of the work area below the ceiling tiles are completed and personnel and equipment decontamination enclosures have been constructed.
 24. As soon as the preparation of the work area below the drop ceiling are completed to the satisfaction of the Authority's representative or the consultant, the contractor and consultant shall locate and identify the limits of the boundary in the phase area they are working. They shall extend the isolation barriers up to the ceiling deck by using the following procedures:

- a. A two-man team shall conduct spot removal where isolation barriers need to be extended up to the deck.
 - b. The Contractor shall remove at least two rows of existing drop ceiling to gain access to the plenum to identify boundary of the work area.
 - c. The Contractor shall spray-mist and remove section of the spray-applied fireproofing at least one foot wide along the work area boundary. One handler shall scrape the materials while the other handler holds the ACM waste bag directly below.
 - d. No spray-applied fireproofing shall be allowed to fall in the drop ceiling or floor area.
25. As soon as the extension of isolation barriers are completed, Contractor shall remove the existing ceiling tiles, cross runners and main runners. All materials shall be disposed as ACM waste. As demolition of ceiling tiles progresses, seal any penetrations along the perimeter in the work area as they are exposed. Seal openings with isolation barrier.
26. When removal of suspended ceiling tiles are completed, preclean and seal airtight ceiling support systems and metal ductwork prior to beginning of asbestos abatement.
27. Areas immediately adjacent to removal areas, such as corridors or hallways that are not in work areas but are necessary routes to and from work areas, shall be protected with two layers of 6-mil plastic sheet on floors and two layers of 6-mil plastic sheet on walls and ceilings.
28. An application for variance must be submitted to the NYCDEP at least two weeks prior to the commencement of work if live electrical wires are to remain inside the work area. Work involving variance shall not commence prior to the receipt of the Department's approval of the variance petition.

3.04 PRE-REMOVAL INSPECTIONS

- A. Prior to removal of any ACM, the Contractor shall notify the Authority's Environmental Consultant and request a

pre-removal inspection. Posting of warning signs, plasticizing of work area, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of the Authority's Environmental Consultant. The Contractor shall not begin asbestos removal until the Authority's Environmental provides a written approval to proceed.

3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS

- A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect enclosures at the beginning and end of each work period.
- B. Visually inspect non-work areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of twice each 8-hour work shift.

3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

- A. General: The Contractor shall be responsible for the proper removal of ACM from the work area using standard abatement industry removal techniques. Work shall be observed by the Authority's Environmental Consultant or his representative. Approval of the Contractor's abatement techniques is required by the Authority's Environmental Consultant to allow for the continuance of work.
- B. Sash Removal: Removal of Asbestos Sash Material shall be performed in accordance with the following procedures:
 - 1. With the exception of sections 1-41(c), 1-41(d), 1-81(p), 1-82(a), 1-83(b), and 1-91, all applicable sections of Chapter 1 of Title 15 shall be followed in conjunction with procedure specified herein.
 - 2. 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.

3. 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.
4. 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.
5. 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.
6. 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.
7. The entire surface to be abated and ground-level perimeter shall be considered the work area unless partitions and warning tape are used to define the work area.
8. A restricted area shall be established using warning tape extending at least 25 feet from the affected areas of the building or to the nearest vertical obstruction or the curb.
9. The restricted area may be entered only by certified workers or authorized visitors.
10. Before plasticizing, the restricted area shall be inspected for ACM debris and, if necessary, pre-cleaned using HEPA vacuums and wet methods. All surfaces of the window to be removed shall be HEPA vacuumed and wet wiped prior to plasticization of the sash.
11. All openings to the building or structure's interior which are within 25 feet of the affected ACM shall be closed and sealed.
12. Scaffolding erected to access the ACM shall be constructed, maintained, and used in accordance with applicable federal, state, and city laws.

13. Horizontal surfaces beneath the affected ACM shall be covered with two layers of fire-retardant 6-mil plastic to a width of six feet.
14. Elevated platforms being used to access the affected ACM shall be plasticized with two layers of fire-retardant 6-mil plastic, which shall extend up from the platform to at least the height of the mid-rail on three sides, and shall be attached directly to the building just below the surfaces under abatement.
15. The ground-level restricted area shall be cleared of all moveable objects and plasticized with two sheets of fire-retardant 6-mil plastic, which shall be extended one foot up the side of the building. The plasticized area shall be ten feet wide for every floor up to a maximum width of thirty feet, or to the curb. This plastic shall be cleaned, replaced, and disposed of as asbestos waste at the end of each shift.
16. Sidewalk bridges in the restricted area shall be covered with two layers of fire retardant 6-mil plastic, placed over and secured to the bridge, spread across the full width, draped over the side to ground level, and as applicable extended to a width of at least 25 feet.
17. 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.
18. 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 on each floor.
19. As applicable, prior to performing window sash removal, remove ACM window caulking in accordance with Section 3.06 D.

For Double Hung Windows:

20. 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.

21. 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.

For Hopper Sashes, Casement, and Awning Windows:

22. For hopper sash, casement, and awning windows, plasticized first the inside pane. Then remove the loose-pin hinges or fixed-pin hinges to take out sashes from the window. If the pin has a decorative top, it is probably a loose-pin hinge. Place a flat blade screwdriver or a tack puller beneath the top ball of the pin and gently hammer it straight up. After the sash has been removed, plasticized with one (1) layer of 6-mil plastic.

For fixed-pin hinge, plasticized first the inside pane, undo the screws that hold the leaf of the hinge to the sash or frame. For rusted or painted loose pin hinges unscrew the side of the hinge anyway. Once the window is out, clean up the hinges.

For Fixed Sash Windows:

23. A fixed sash window which is sandwiched between the inside stops and the outside window frame may have been nailed or screwed into the frame. If a sash is nailed in or screwed, follow the steps below and be prepared to wriggle the nails out of the frame as you pry and pull the sash forward or unscrew as necessary. Slip a putty knife between the side stop and the frame of the window. Starting at the bottom, ease the stop carefully away from the frame taking care not to split the wood. Remove both

sides first and then the top. Gently pry, wiggle, lift and rock the top of the sash forward. Lift the sash up, forward and out of its channel. If it is nailed in place try to remove the nails while they are still in the sash rather than gouging the heads out of the wood. Do not try to remove the bottom piece of wood - the windowsill - as that would crack the plaster.

24. 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.
25. The clean containerized items or wrapped window sashes shall be moved into a lockable waste container.
26. The plasticized 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).
27. A proposal must be submitted and approved by DEP for window sash removals when the worker is located outside the building.

C. Caulking Removal:

All caulk and putty (concealed and exposed) must be assumed to be PCB-containing, unless otherwise indicated in section 02082. Contractor must refer to sections 02082 and S01900 for additional handling and disposal requirements.

1. With the exception of sections 1-41(c), 1-41(d), 1-81(p), 1-82(a), 1-83(b), and 1-91, all applicable sections of Chapter 1 of Title 15 shall be followed in conjunction with procedure specified herein.
2. A NYCDEP-certified asbestos handler supervisor shall be on-site at all times during the removal caulking materials from building facades. The supervisor shall establish and maintain a project log and be responsible for any emergency situations that may occur.
3. All windows and other openings within 25 feet of the affected ACM caulking material shall be fully closed or otherwise made airtight with two layers

of plastic. This includes openings on the same floor and also openings on immediately adjacent floors above and below.

4. 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 window (or other opening) and the building interior.
5. Any scaffolding erected shall be constructed, maintained, and operated in accordance with the applicable federal, state, and city rules and regulations.
6. 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 two (2) layer of 6 mil plastic from one (1) foot up the building exterior wall to the edge of the sidewalk tunnel or at least six (6) feet away, whichever is greater. It shall be cordoned off with clearly identifiable asbestos tape. This space (except the decon) shall be replasticized at the end of each shift.
7. The remote worker and waste decontamination enclosure system, constructed in accordance with 1-82 and 1-83 shall be erected at the base of the scaffold or restricted area. This unit shall be maintained in the work place for the duration of the abatement.
8. The elevated platform shall be at least one (1) foot below the surface or material to be abated. This work area shall extend up from the platform to a minimum height of two (2) feet on three sides. The plastic on the side facing the facade shall be attached directly to the building just below the surface or joint to be abated.
9. Personnel performing the work shall be NYS/NYC certified asbestos handlers. An NYS/NYC certified asbestos handler/supervisor shall be in the work place at all time during the ACM caulking abatement. The asbestos handler/supervisor 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 materials adequately wetted, it shall be stripped using hand tools, with the ACM caulking material being directly bagged or dropped into a flexible catch basin and promptly bagged. The stripped joints shall then be HEPA vacuumed, and then 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 at a 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 plastic sheeting shall be applied only as needed.
12. A visual clearance inspection shall be conducted by the asbestos handler supervisor and project monitor after the work area dries, to ensure the absence of ACM residue or debris in the work area.
13. Air monitoring shall be conducted in accordance with the relevant provisions of subchapter D of Chapter 1 of Title 15. If visible emissions are noted or if the asbestos in air concentrations within the building exceeds 0.01 f/cc or the measured background level, all work shall stop. Abatement procedures shall be reevaluated.

D. Built-up Roof and Flashing Removal:

These procedures apply only to the removal of asbestos-containing roofing material (ACRM) from exterior roof surfaces. With the exception of 1-41(c), 1-41(d), 1-81(m), 1-81(p), 1-91, 1-102(b), 1-112(d), and 1-112(e), all sections of Chapter 1 of Title 15 shall be followed in conjunction with procedure specified herein.

1. Preliminary examination shall be conducted and precautions shall be 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 the abatement activity.

2. Abatement shall not be carried out during adverse weather conditions (e.g., precipitation, heavy winds, ambient temperature below 32 degrees Fahrenheit, etc.).
3. The work area on the roof shall be cordoned off, and only authorized persons shall have access to the "designated" work area.
4. Movable objects shall be removed from the work area, or kept in place and wrapped in one sheet of 6-mil plastic sheeting. Fixed objects including perimeter walls, bulkheads, cooling towers, ducts and other rooftop appurtenances shall be covered in one sheet of plastic (minimum height = 6 ft.).
5. The worker decontamination unit may be attached to each work area at an entry/exit from each work area in accordance with section 1-82 of Chapter 1 of Title 15, or may be remote, in which case it shall be equipped with an airlock at the entrance. 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 of ACRM.
6. For 1,000 square feet or more of ACRM removal, a separate waste decontamination facility as per section 1-83 of Chapter 1 of Title 15 shall be located at an entry/exit from each work area.
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. Fixed objects including perimeter walls, bulkheads, cooling towers, ducts and other rooftop

appurtenances shall be covered in one sheet of fire retardant 6-mil plastic up to a height of at least six feet.

10. Prior to actual removal, the built-up roofing and flashing shall be blanketed and wetted with a minimum 1" coating of the acceptable foam or viscous liquid which 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.
11. The foam or viscous liquid shall be non-toxic, shall not require special respiratory protection for handling, and shall not affect the handling and disposal of the waste.
12. Manual methods of removal are recommended; however, if hand-held power tools are used to drill, cut into, or otherwise disturb the asbestos-containing roofing material, the power tools shall be equipped with HEPA-filtered local exhaust ventilation and operated to prevent potential fiber release.
13. Portable HEPA-vacuum machines shall be available during abatement.
14. 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 double-bagged waste shall be transferred outside the clean room for its final transfer for storage in an enclosed waste container.
15. Upon completion of the abatement in roof work area, clean-up procedures shall involve removal and bagging of:
 - a. the asbestos containing roofing material (ACRM)
 - b. visible accumulations of asbestos containing waste
 - c. all excess foam or similar viscous liquid
 - d. all debris, and shall be followed by a thorough wet cleaning.

- e. All tools shall be wet cleaned and HEPA-vacuumed, and then removed from the work area upon completion.
 16. 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.
 17. If the work area fails visual inspection, it shall undergo another wet cleaning and/or HEPA vacuuming until it passes the visual inspection.
 18. When the visual inspection and clearance testing is successful, all plastic may be removed.
 19. Remove all layers of roofing materials including concealed layers of membrane, vapor barriers, screed, plywood between roofing materials, etc., down to the structural slab, at no additional cost to the Authority, unless otherwise specified by the architect/engineer.
- E. Asbestos Containing Materials including but not limited to Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Material, etc. Removal:
1. Removal of asbestos materials including but not limited to Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Material, etc. using full containment procedures (large projects).
 - a. Remove mounted objects: remove, clean and store outside the work area or remove and dispose as asbestos waste (as required by Project Manual) ceiling and wall mounted objects that interfere with asbestos abatement.
 - b. 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. Prepare the area as described in Subparagraph "Gross Removal

Area Preparations" of this Section. 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. Do not over saturate and cause excess dripping. Remove the saturated asbestos material in small sections.

- c. For plaster abatement, cut wire lath into manageable sections. Cut hanger wires supporting lath and remove asbestos containing material and ceiling intact without dropping them to the floor.
- d. As the asbestos material is removed, pack the material in sealable plastic bags which shall be placed in labeled drums for transport. Remove saturated asbestos material in small sections, minimizing free fall. Remove asbestos materials carefully from equipment. Materials shall not be allowed to dry out.
- e. Provide a drop chute to contain materials through descent if fall exceeds ten feet. Vertical chutes are prohibited. Maximum inclination from horizontal shall be 60 degrees. Material shall not be allowed to dry out. Metal shovels shall not be used to pick up or move accumulated ACM waste in the vicinity of plastic floor and wall barriers.
- f. After removal of lath and asbestos containing material, either remove any overspray on decking and any structures above using a stiff nylon bristled brush or clean by some equivalent method to remove all visible residue.
- g. 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.)
- h. 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.

- i. Upon completion of the abatement, the enclosed surfaces shall be wet cleaned by using rags, mops or sponges.
2. Removal of asbestos materials including but not limited to Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Window / Door Frames, Roof Screed Material, etc. utilizing Tent Procedures (For Gross Removal) 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 § 1-106 shall be complied with except that (1) all tents shall be lined with two (2) layers of plastic sheeting (6-mil thickness at a minimum), (2) the amounts of ACM that may be abated in each 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 tents shall NOT EXCEED 1,000 combined square feet plus linear feet.
 - c. Work Area Pre-cleaning Procedures: After establishing decontamination enclosure systems, prepare and pre-clean 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 pre-cleaned 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.
- d. All 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
 - e. A minimum of one air volume change per 15 minutes through each tent shall be maintained.
 - f. 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.
 - g. 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(k), before each worker exits any airlock.
 - h. Any decontamination unit that is not attached to a tent (i.e., that is remote from a tent) shall be constructed as specified in Section 3.01 of this specification.

- i. 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. Any decontamination unit that is not attached to a tent (i.e., that is remote from a tent) shall be constructed as specified in Section 3.01 of this specification.
- j. 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.
- k. Scrape asbestos containing materials completely from the substrate surfaces. No residue shall remain on substrate after the stripping work is completed.
- l. 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.
- m. 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.
- n. For window frame removal, 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.

- o. An application for variance must be submitted to the NYCDEP if live electrical wires are to remain inside the work area.

F. Removal of ACM Caulking Materials, Asphaltic Mastic or Tar, Cement Siding or Shingles, and Paints from the Parapet and Exterior Wall(s):

Removal of asbestos-containing materials from the exterior and parapet walls as described in this Specification.

1. With the exception of 1-81 (p), 1-91 and 1-112(d, e, g, and h) of Chapter 1 of Title 15, all other requirements shall be followed. The work shall be performed when the building is unoccupied.
2. The entire surface to be abated and the ground level perimeter shall be considered the work area unless partitions and warning tape are used to define the work area, except that if horizontal surfaces below the surface to be abated is not the ground, the horizontal surface underneath the abatement shall be considered the work area, not the ground.
3. A restricted area shall be established using warning tape extending at least 25 feet from the affected areas of the building or to the nearest vertical obstruction or the curb.
4. All openings on the roof and other openings/windows within 25 feet of the affected ACM coping stone caulking material shall be fully closed or made airtight.
5. Scaffolding erected to access the ACM shall be constructed, maintained, and used in accordance with applicable federal, state, and city laws.
7. 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 2 layer of 6 mil plastic, which shall be extended one foot up the side of the building. The plasticized area shall be ten feet wide for every floor up to a maximum width of thirty feet, or to

the curb. It shall be cordoned off with clearly identified asbestos hazard tape. At the end of each shift, the plastic has to be cleaned, removed, and disposed as asbestos waste.

6. A remote worker/waste decontamination enclosure system shall be constructed within the restricted area. 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 material 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 poly. All exposed joints shall be coated with a clear encapsulant.
8. All ACM caulking material shall be bagged directly on detachment from the substrate.
9. Air monitoring shall be conducted in accordance with the relevant provisions of subchapter D of Chapter 1 of Title 15.
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 coping stone caulking 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 as asbestos waste.
12. All tools shall be wet cleaned and HEPA - vacuumed, and then 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.

14. If visible emissions are noted or if the asbestos in air concentrations within the building exceeds 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.
 15. For handling and disposal requirements of paint follow SCA specification sections 02085 and S01900.
- G. Procedures for Installation of Electrical Conduits, Risers and Computer Power Source Equipment
1. Removal of Materials at Core Drill Locations: 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.
 2. Method One: Drilling completely through ceilings and floors - Tent Work.
 - a. All work shall be conducted by licensed asbestos handlers. An asbestos supervisor shall be present and oversee the work.
 - b. All work shall be conducted when school is not in session.
 - c. Locations where work is to be conducted are regulated areas which are to be restricted and posted in accordance with applicable regulations.
 - d. Respirators and disposable clothes (TYVEK Suits) are to be worn for the duration of the work.
 - e. A temporary Decontamination Unit shall be located on the premises in proximity to the work area.
 - f. Tents shall be installed on the floor below and the floor where the penetration is to be made. Each Tent shall be individually attached to its own negative air pressure equipment. Tents shall have a change room. Individuals

working in the tent shall wear two disposable suits removing one upon exiting the tent. The worker shall then proceed directly to the shower and decontaminate.

- g. Drilling to effect the installation of electrical conduit risers shall be conducted inside the tent enclosure. Air samples will be taken as prescribed by the United States Environmental Protection Agency regarding clearance of "mini-enclosures" pertaining to AHERA. New York City Department Environmental Protection "durings" air samples will also be employed as described below. At the conclusion of the drilling loose debris shall be HEPA vacuumed and wet cleaned. Encapsulant shall be applied prior to air clearance of the tent. All openings and perimeters of openings shall be secured from delamination caused by subsequent work by other trades prior to air clearance testing. All equipment used for the drilling shall be wet wiped and HEPA vacuumed in the tent prior to removal.
- h. Phase Contrast Microscopy (PCM) will be employed during abatement and to clear each tent. Two During Samples (Phase Contrast Microscopy) outside the tent will be taken at the start of the drilling and conclude at the completion of the drilling. For clearance, a minimum of two samples will be taken inside and two samples will be taken outside of each tent. Each of the samples analyzed from inside the tent must be below the limit of detection of 0.01 f/cc. Analysis of PCM samples will be via NIOSH 7400 protocol. If PCM samples fail, TEM analysis via NIOSH 7402 protocol will be utilized. All air tests, except OSHA personals, will be provided by others.
- i. In the event of a breach in the tent, Transmission Electron Microscopy will be used to establish the Authority's re-occupancy criteria.
- j. Upon notification of successful clearance the tent shall be broken down and disposed of as ACM contaminated waste.

- k. Work utilizing this method cannot be carried on simultaneously with work utilizing method two described below in the same work area.
3. Method Two: Drilling completely through walls. Drilling into any surface to effect the installation of conduit, hangers, cabinets, fastening devices, carriers, supports, floor outlets, and/or other related equipment and devices.
- a. All work shall be conducted by licensed asbestos handlers. An asbestos supervisor shall be present and oversee all work.
 - b. All work shall be conducted when school is not in session.
 - c. The work area for each phase of the project will be delineated by the Authority or its designated representative. In general this will be limited to one of the following:
 - 1) An entire floor.
 - 2) A group of rooms on one floor and the adjoining corridor.
 - 3) A single room.

This shall be considered a regulated area which is required to have restricted access and have signs posted in accordance with applicable rules and regulations.
 - d. All powered tools used to make the penetrations shall be equipped with a GS 81 vacuum system, as manufactured by NILFISK, or its equivalent. The system shall be connected to a portable HEPA vacuum.
 - e. Respirators and disposable clothes (TYVEK Suits) are to be worn for the duration of the work.
 - f. A temporary Decontamination Unit shall be located on the premises.

- g. Plastic drop cloths shall be used under all ceiling and wall penetrations. Where feasible, these cloths shall extend at least five feet in any direction from the penetration or up to one foot up the wall. Plastic shall be fire retardant and at least 6 mils thick.
- h. Portable hand held mist spray bottles shall be utilized with amended water to wet both localized areas impacted and general cleaning.
- i. After completion of each penetration and the wet cleaning the areas on each side of the opening, the inside of the hole shall be encapsulated using a penetrating encapsulant. After each use tools shall be wet wiped. The cleaning medium shall be disposed of as ACM contaminated waste.
- j. Phase Contrast Microscopy (PCM) "Durings" will be employed to verify cleanliness and project completion. A minimum of five (5) PCM samples will be taken inside each defined work area. Each of the samples analyzed from inside the work area must be below the limit of detection of 0.01 f/cc. Analysis of PCM samples will be via NIOSH 7400 protocol. If PCM samples fail, TEM analysis via NIOSH 7402 protocol will be utilized. All air tests, except OSHA personals, will be provided by Authority.
- k. If the integrity of the local HEPA exhaust is breached, the OSHA (PEL) exceeded, or area samples are above 0.01 f/cc, all work shall stop and rules addressing such instances shall be complied with as per Rules of the City of New York, Title 15 New York City Department of Environmental Protection.
- l. Upon completion of the work scheduled and verification, by the Authority's Project Monitor, that all air samples are acceptable, the contractor shall continue to the next area.
- m. At the conclusion of each scheduled operation the workers shall proceed to the Decontamination Unit and shower out. Tools shall be wet wiped and HEPA vacuumed at the

end of the scheduled work and left in a non-permeable container until their next use.

- n. Work utilizing this method cannot be carried on simultaneously with work utilizing method one described above in the same work area.

H. Interior Restricted Area Intact Removal of Fire Doors

The follow procedures shall be followed for the intact removal of fire doors only:

1. All work must be performed in accordance with the intact removal procedures as specified herein (in accordance with ICR56 and NYC Title 15 regulations.
2. All work shall be conducted by licensed asbestos handlers. An asbestos supervisor shall be present and oversee the work.
3. A remote personal decontamination enclosure system that complies with 15 RCNY 1-82 requirements. A waste decontamination enclosure system that fully complies with 15 RCNY 1-83 shall be utilized.
4. The regulated abatement work areas, decontamination units, airlocks, and dumpster areas shall be cordoned off at a distance of twenty-five feet (25') and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved or the abatement project is complete. These areas shall have asbestos warning Signage posted in accordance with Title 15, Chapter 1 requirements.
5. Interior ACM intact component removals can either be removed within tents or removed as part of a larger work area. Removals without tents will require plasticizing all exposed surfaces as per Title 15.
6. Background air sampling is not required for these intact types of removals.
7. A pre-abatement waiting period is not necessary for these intact types of removals.
8. All components with ACM shall be removed intact without any disturbance to the ACM matrix during removal operations. If power tools are utilized to

aid in unfastening components, the power tools shall be manufacturer equipped with HEPA-exhaust attachment, and shall be utilized as per manufacturer's instructions.

9. Materials removed shall be containerized or immediately wrapped in two layers of 6 mil, fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility.
10. The work area must be a properly cleaned followed by the observance of appropriate waiting/settling and drying time.
11. Daily abatement air sampling shall be conducted by the Authority's Environmental Consultant.
12. In lieu of post-abatement clearance air monitoring, the most recent daily abatement air samples can be used if readings are below 0.01 f/cc.
13. After removal and cleanings are complete, an authorized and certified Project Monitor, independent of the Abatement Contractor, shall determine if the area is dry and free of visible asbestos debris. If the area is determined to be acceptable and the most recent daily abatement air sample results meet clearance criteria, the final dismantling of the site may begin.
14. Upon completion of the ACM intact component removal, all remaining waste materials shall be removed within each work area and the critical barrier caulk, tape and/or interior plastic sheeting, shall be containerized or immediately wrapped in two layers of 6 mil, fire retardant plastic sheeting or bagged and secured air tight prior to transport to the waste decontamination facility.

I. Additional Removal Requirements:

1. The Authority's Environmental Consultant shall issue a stop work order if visible emissions are detected outside the work areas and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s)

causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques, and the Contractor receives written notice from the Authority's Environmental Consultant.

3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES

- A. Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, New York City Department of Sanitation (in relation to transport, storage, and disposal of ACM) and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil plastic sheeting wrapped airtight and properly labeled. Materials to be transported through a non-work area building space shall be placed in hard wall shipping containers for handling. Specific requirements for decontamination of waste containers and load out through decontamination enclosure systems are outlined below.
- B. Decontamination of Impermeable Containers and Plastic Disposal Bags: For Sash Removal, Caulking Removal, Frame and Sash Removal, Built-up roofing and Flashing Removal, Plaster Removal, and Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Material, (Small Project Removal), the following procedure shall be used when removing ACM from the work area for load out through the personnel decontamination enclosure system (remote decon).
1. Waste removal shall not occur during worker shift changes or when workers are showering or changing.
 2. Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in two layers of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in the work area before transferring such items into the decontamination enclosure system.
 3. 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. Place materials in hard wall containers, if required.

4. The clean containerized items or wrapped window sashes shall be moved into a lockable waste container.
- C. Waste Load-out Through Equipment Decontamination Enclosure (Full Decontamination Facility): For Thermal System Insulation / Tar (Pipe Lagging, Duct Insulation, Tar), Roof Screed Removal (Large Project), the following waste packaging and decontamination procedures shall be used when removing ACM from the work area by load out through the equipment decontamination enclosure system:
1. Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the work area. Move wrapped asbestos waste to the equipment washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
 2. The clean containerized items shall be moved to the equipment decontamination enclosure holding area pending load-out to storage or disposal facilities.
 3. Load-out of containers from the decontamination enclosure holding area shall be performed by workers who have entered the equipment decontamination enclosure system from the uncontaminated non-work area. Dress workers moving asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the work area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the work area. Ensure that contaminated workers do not exit the work area through the equipment decontamination enclosure system.
 4. Thoroughly clean the equipment decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
 5. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, whether

turned inside out or not, shall be handled and disposed of as ACM waste.

- D. Asbestos containing Caulking Materials contaminated with PCB shall be disposed of as PCB material as specified in Sections S01900 and 02082. Store all materials at the job site in a suitable and designated area. Store materials away from wet or damp surfaces and under cover. Storage areas shall be kept clean and organized.
1. All PCB waste must be located at or near the point of generation in a locked area. Up to 55 gallons may be stored at the point of generation for an indefinite period, but any more than 55 gallons must be moved within 3 days to a Container storage area (CSA) as specified in 6 NYCRR Section 372.2 "Standards Applicable to Generators of Hazardous Waste", or off site. Waste may be stored at the CSA for 90 days, during which labeling, inspections, and other requirements must be met as described in 6 NYCRR Section 372.2, Section 373-3.1(d) and Subpart 373-3.
 2. While on-site, the container shall be labeled with PCB Warning Labels and DEC Hazardous Waste Labels. All waste containers shall be fully enclosed and lockable (i.e. enclosed dumpster, trailer, etc.)

3.08 CLEANUP, AND CLEARANCE TESTING OF WORK AREAS

- A. Area air samples will be collected during and after abatement according to established air clearance criteria per in compliance with New York State ICR 56 and New York City Chapter 1, Asbestos Control Program.
- B. Minimum Volume: PCM Samples - 1800 liters; TEM Samples- 1250 liters.
- C. Flow Rate; PCM Samples 5 to 15 liters/min.; TEM Samples 1 to 10 liters/min.
- D. Clearance procedure for areas completed utilizing full enclosures shall be following four steps:

| | | |
|---------|--------------------|---|
| Step 1. | First Cleanup | Visual Inspection |
| Step 2. | Second Cleanup | Visual Inspection |
| Step 3. | Third Cleanup | Visual Inspection |
| Step 4. | Final Re-occupancy | Visual Insp., fiber count of <0.01 fiber/cc of air using NIOSH method |

7400 and <70 s/mm² of air using TEM analysis procedures.

1. Step 1. First Cleanup:
 - a. Remove any visible accumulation of asbestos material and debris. All sealed drums, plastic bags, and equipment used in the work area shall be removed from the work area. The waste decontamination enclosure system shall be wet cleaned twice using wet cleaning methods upon completion of waste removal.
 - b. Upon request of the Contractor the IH will perform a visual inspection. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
 - c. A thin coat of lockdown encapsulant shall be applied to all surfaces in the work area which were not the subject of removal or abatement, including the cleaned layer of the surface barriers, but excepting sprinklers, standpipes, and other active elements of the fire suppression system.
2. Step 2: Second Cleanup:
 - a. Twelve (12) hours after the First Cleanup, the cleaned and encapsulated layer of the surface barriers shall be removed from the walls and floors.
 - b. All objects and surfaces in the work area shall be HEPA vacuumed and wet cleaned a second time (second cleaning).
3. Step 3: Third Cleanup:
 - a. Four hours after the second cleanup, the remaining plastic barriers shall be removed from the walls and floors. All objects and surfaces in the work shall be HEPA vacuumed and wet cleaned a third time (third cleaning).
 - b. All containerized waste shall be removed from the work area through the decontamination enclosures and the holding area.

- c. All tools and equipment shall be removed from the work area and decontaminated in the waste decontamination enclosure system.
 - d. A thorough visual inspection shall verify the absence of asbestos-containing waste material and dust.
4. Step 4: Final Re-occupancy:
- a. Sampling shall not begin until at least one (1) hour after the area is dry from the third cleaning.
 - b. Final visual inspection for re-occupancy will be done by the IH for the purpose of observing whether cleaned areas are free of dust, dirt, and debris. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified.
 - c. When the work area passes the IH's visual re-occupancy inspection, the testing laboratory shall perform air monitoring. Aggressive air sampling procedures shall be used within the work area during clearance air monitoring. Re-occupancy will be approved by the IH if the specified fiber count in the work area is achieved according to the testing laboratory.
 - d. When the work area passes the re-occupancy test, all controls and seals established shall be removed.
- E. Clearance procedure for areas completed utilizing Exterior Foam Procedures shall be following two steps [ACM Built-up Roofing and Flashing Materials, and Caulking Materials, Asphaltic Mastic or Tar, Cement Siding or Shingles, and Paints from the Parapet and Exterior Wall(s)]:
- Step 1. First Cleanup Visual Inspection
 - Step 2. Re-occupancy Visual Inspection and fiber Clearance count of <0.01 fiber/cc of air using NIOSH Method 7400.
- F. Procedures for Installation of Electrical Conduits, Risers and Computer Power Source Equipment:

- Step 1. Clean-up Visual inspection
- Step 2. Final Re-occupancy Visual Inspection and fiber Clearance count of <0.01 fiber/cc of air using NIOSH Method 7400.

G. Post Abatement Sampling Requirements:

The Authority's Environmental Consultant and the asbestos contractor shall comply with all pertinent NYC and NYS requirements in addition to SCA's IEH Protocols. The most stringent interpretation shall be followed when a discrepancy exists between NYS and NYC requirements. Furthermore, there shall be no deviation from SCA's Protocols.

3.09 PRE AND DURING ABATEMENT AIR MONITORING

- A. Pre-Abatement Air Sampling: The industrial hygiene company retained by the Authority will perform the pre, during and post abatement sampling. Prior to commencement of abatement activities, at a minimum, comply with NYS, NYC and SCA sampling Protocols. Where a discrepancy exists between NYC Title 15 and NYS ICR 56 requirements, the more stringent interpretation shall apply unless otherwise directed by the Field Industrial Hygienist.
- B. Area air samples will be collected prior to the abatement, during and after abatement according to established air clearance criteria per in compliance with New York State ICR, New York City Title 15 and SCA Protocols.

3.10 CONTINGENCY PLAN

- A. Contingency plan during abatement shall be implemented as described below. These are the minimum requirements that shall be enforced by the Contractor. These requirements shall not limit the Project Monitor from instituting additional requirements, if necessary, for the protection of the building occupants.
 - 1. If the pressure differential drops below 0.02 inches w.c., the following procedures shall be implemented:
 - a. The Contractor shall cease all abatement activity in the work area.

- b. The Contractor shall investigate and evaluate the engineering controls and determine the source of the pressure loss.
 - c. The Contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to reestablish an acceptable pressure differential.
2. If the fiber levels outside the work area exceed 0.010 f/cc criterion, the following procedures shall be implemented:
- a. The Contractor shall investigate and evaluate the engineering controls to determine the source of the high air level.
 - b. Cleaning shall be performed outside the work areas and shall include but not limited to: wet wiping, HEPA vacuum, and misting the air, etc. Cleaning the affected area shall be continued outside of containment and PCM sampling shall also be continued until the result of fiber count in the area is either equal to or less than 0.010 f/cc by PCM or <70 s/mm² of air using TEM analysis.
 - c. If a power outage occurs during active abatement work, all abatement work must be stopped and the entrances to the work areas must be sealed immediately.

3.11 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE

- A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled bags of ACM from the work area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. The waste container shall be lined with two layers of fire retardant plastic. Asbestos-containing waste shall remain under the positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.
- B. Sealed and labeled disposal bags or waste wrapped in two layers of plastic sheeting sealed airtight shall be used

to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the work area and disposal of waste are outlined below:

1. A properly completed and original "Waste Shipment Record" form shall accompany asbestos waste which is transported to a disposal site. This form shall be signed and dated by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. All original manifest forms and waste receipts shall be provided to the Authority's Environmental Consultant (see Paragraph "Submittal").
2. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste containers enroute to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.
3. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d) (1).
4. Only sealed plastic bags or completely sealed window are permitted to be deposited in landfill. Damaged, broken sealed windows or leaking plastic bags shall resealed prior to being deposited in the landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums or sealed windows at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.
5. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

3.12 ABATEMENT COMPLETION AND BUILDING DEPARTMENT PERMIT

- A. An Asbestos Completion or Conditional Completion (ACP 20/21) will be needed to obtain construction and alteration permit. Immediately following the abatement completion, the abatement contractor shall close the project with the NYCDEP. Upon receipt of project close-out information from the NYCDEP, the Project Monitoring firm shall issue an ACP-15 with applicable documents to the NYCDEP. Following the review and approval of ACP-15, NYCDEP will issue ACP 20/21.
- B. The General Contractor must provide MSDS information and a notarized certification for the re-placement products installed indicating that all products used for the project were asbestos free.

PART 4 - SCHEDULES

SEE TABLE(S) BEGINNING ON NEXT PAGE

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|---|--|---------------------------------|-------------------------------|--------------------------|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| Flood Elimination, Parapets, Windows | | | | | |
| 01 | Building Interior - Throughout | Wall Plaster | Non-ACM | - | As per 2017 AHERA Survey |
| 02 | Building Interior - Throughout | Ceiling Plaster | Non-ACM | - | As per 2017 AHERA Survey |
| 03 | Building Interior - Throughout | Soffit Plaster | Non-ACM | - | As per 2017 AHERA Survey |
| 04 | Building Interior - Throughout | Gypsum Board and Joint Compound | Non-ACM | - | As per 2017 AHERA Survey |
| 05 | Building Interior - Throughout | Concrete Floors | Non-Suspect Material | - | |
| 06 | Building Interior - Throughout | Concrete Walls | Non-Suspect Material | - | |
| 07 | Building Interior - Throughout | Concrete Ceilings | Non-Suspect Material | - | |
| 08 | Building Interior - Throughout | Interior Brick | Non-Suspect Material | - | |
| 09 | Building Interior - Throughout | Interior Brick Mortar | Non-ACM | - | As per 2017 AHERA Survey |
| 10 | Building Interior - Throughout | Cinder Block | Non-Suspect Material | - | |
| 11 | Building Interior - Throughout | Cinder Block Mortar | Non-ACM | - | As per 2017 AHERA Survey |
| 12 | Building Interior - Throughout | Glazed Block | Non-ACM | - | As per 2017 AHERA Survey |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|---|---|--|---------------------------------|-------------------------------|--|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 13 | Building Interior - Throughout | Glazed Block Mortar | Non-ACM | - | As per 2017 AHERA Survey |
| 14 | Building Interior - Throughout | Flooring / Sub-Flooring Materials | Assumed ACM | 20 SF (20 Locations) | For thru-floor coring. Assumed ACM - Remove as ACM. Quantity shall cover all penetrations regardless of number, size, or location. |
| 15 | Building Interior - Throughout | Electrical Wire Insulation | Assumed ACM | - | Material not to be disturbed by the current scope of work. Any disconnections / reconnections to be performed by a licensed electrician with a valid asbestos handler certificate. |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|---|---|--|---------------------------------|-------------------------------|--|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 16 | Building Interior - Throughout | Electrical Panels | Assumed ACM | - | Material not to be disturbed by the current scope of work. Any disconnections / reconnections to be performed by a licensed electrician with a valid asbestos handler certificate. |
| 17 | Cellar - Throughout | Wall Paint / Primer Surfacing Material | Non-ACM | - | As per 2017 AHERA Survey |
| 18 | Cellar - Throughout | Wall Paint - Blue | Non-ACM | - | As per 2017 AHERA Survey |
| 19 | Cellar - Throughout | Wall Paint - Green | Non-ACM | - | As per 2017 AHERA Survey |
| 20 | Cellar - Throughout | Floor Paint - Gray | Non-ACM | - | As per 2017 AHERA Survey |
| 21 | Cellar - Throughout | Sprayed-On Fireproofing | Non-ACM | - | As per 2017 AHERA Survey |
| 22 | Cellar - Throughout | Exterior Window / Lintel Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 23 | Cellar - Throughout | Concealed Window Caulking | Assumed ACM | 11 SF (125 LF, 6 M.O.) | Assumed ACM - Remove as ACM |
| 24 | Basement - Throughout | Exterior Window / Lintel Caulking | ACM | 105 SF (1,242 LF, 39 M.O.) | As per 2017 AHERA Survey |
| 25 | Basement - Throughout | Concealed Window Caulking | Assumed ACM | 105 SF (1,242 LF, 39 M.O.) | Assumed ACM - Remove as ACM |
| 26 | Basement - | Exterior Door | Non-ACM | - | As per 2017 AHERA |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|--|---|--|--------------------------------------|--|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| | Throughout | Caulking | | | Survey |
| 27 | 1 st Floor - Throughout | Exterior Window / Lintel Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 28 | 1 st Floor - Throughout | Concealed Window Caulking | Assumed ACM | 105 SF (1,222 LF, 36 M.O.) | Assumed ACM - Remove as ACM |
| 29 | 1 st Floor - Throughout | Interior Window Putty | Non-ACM | - | As per 2017 AHERA Survey |
| 30 | 1 st Floor - Throughout | Exterior Door Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 31 | 2 nd Floor - Throughout | Exterior Window / Lintel Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 32 | 2 nd Floor - Throughout | Concealed Window Caulking | Assumed ACM | 118 SF (1,414 LF, 40 M.O.) | Assumed ACM - Remove as ACM |
| 33 | 2 nd Floor - Throughout | Interior Window Putty | ACM | 200 SF (40 M.O.) | As per 2017 AHERA Survey |
| 34 | 3 rd Floor - Throughout | Exterior Window / Lintel Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 35 | 3 rd Floor - Throughout | Concealed Window Caulking | Assumed ACM | 122 SF (1,460 LF, 40 M.O.) | Assumed ACM - Remove as ACM |
| 36 | 3 rd Floor - Throughout | Interior Window Putty | Non-ACM | - | As per 2017 AHERA Survey |
| 37 | 4 th Floor - Throughout | Exterior Window / Lintel Caulking | Non-ACM | - | As per 2017 AHERA Survey |
| 38 | 4 th Floor - Throughout | Concealed Window Caulking | Assumed ACM | 113 SF (1,350 LF, 41 M.O.) | Assumed ACM - Remove as ACM |
| 39 | 4 th Floor - Throughout | Interior Window Putty | ACM | 205 SF (41 M.O.) | As per 2017 AHERA Survey |
| 40 | Roof Bulkhead | Exterior Window / Lintel Caulking | Assumed ACM | 1 SF (12 LF, 1 M.O.) | Assumed ACM - To be Tested During Construction |
| 41 | Roof Bulkhead | Concealed Window Caulking | Assumed ACM | 1 SF (12 LF, 1 M.O.) | Assumed ACM - Remove as ACM |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|--|---|--|--------------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 42 | Roof Bulkhead | Exterior Door Caulking | Assumed ACM | 1 SF (17 LF, 1 M.O.) | Assumed ACM - To be Tested During Construction |
| 43 | Roof Bulkhead | Concealed Door Caulking | Assumed ACM | 1 SF (17 LF, 1 M.O.) | Assumed ACM - Remove as ACM |
| 44 | Roof Bulkhead | Fire Door Insulation | Assumed ACM | 25 SF (1 Door) | Assumed ACM - To be Tested During Construction |
| 45 | Building Exterior - Throughout | Exterior Brick | Non-Suspect Material | - | |
| 46 | Building Exterior - Throughout | Exterior Brick Mortar | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 47 | Building Exterior - Throughout | Limestone Mortar | Non-ACM | - | As per Airtek Survey dated 11/2/09 - SID: 33795 |
| 48 | Building Exterior - Throughout | Limestone Caulking | Non-ACM | - | As per Airtek Survey dated 11/2/09 - SID: 33795 |
| 49 | Building Exterior - Throughout | Textured Wall Paint - Red | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 50 | Building Exterior - Throughout | Caulking Along Foundation Wall - Gray | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 51 | Building Exterior - Throughout | Tar Along Foundation Wall | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 52 | Building Exterior - Throughout | Paint on Window Guards | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 53 | Building Exterior - | Paint on Wrought | Non-ACM | - | As per CES Survey |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|--|---|--|--------------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| | Throughout | Iron Fence | | | dated 2/5/14 - SID: 46907 |
| 54 | Building Exterior - Throughout | Paint on Wrought Iron Roof Fence | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907 |
| 55 | Building Exterior - Throughout | Chimney Cap Tar / Waterproofing | Assumed ACM | 60 SF | Assumed ACM - To be Tested During Construction |
| 56 | Building Exterior - Throughout | Below Grade Foundation Waterproofing | Material Not Present | - | As per Airtek Survey dated 3/13/10 - SID: 35318 |
| 57 | Building Exterior - Throughout | Lintel Coating / Flashing Tar | Material Not Present | - | As per Airtek Survey dated 3/13/10 - SID: 35318 |
| 58 | Building Exterior - Throughout | Spandrel Beam Coating / Flashing / Tar | Material Not Present | - | As per Airtek Survey dated 3/13/10 - SID: 35318 |
| 59 | Building Exterior - Throughout | Back-Up Masonry / Tar / Waterproofing | Material Not Present | - | As per Airtek Survey dated 3/13/10 - SID: 35318 |
| 60 | Building Exterior - Throughout | Drain Pipe Insulation / Tar / Waterproofing | Assumed ACM | 150 LF (15 Locations) | Assumed ACM - To be Tested During Construction |
| 61 | Roof A | Roof Membrane | Assumed ACM | 16,000 SF | Assumed ACM - To be Tested During Construction |
| 62 | Roof A | Roof Flashing | Assumed ACM | 1,200 SF | Assumed ACM - To be Tested During Construction |
| 63 | Roof A | Roof Screed | Assumed ACM | 16,000 SF | Assumed ACM - To be |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|---|---|--|---------------------------------|-------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| | | | | | Tested During Construction |
| 64 | Roof A | Cap Flashing Caulking | Assumed ACM | 100 SF (1,200 LF) | Assumed ACM - To be Tested During Construction |
| 65 | Roof A | Parapet Brick | Non-Suspect Material | - | |
| 66 | Roof A | Parapet Brick Mortar | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907. Same material as exterior brick mortar |
| 67 | Roof A | Parapet Expansion Joint Caulking | Assumed ACM | 8 SF (90 LF) | Assumed ACM - To be Tested During Construction |
| 68 | Roof A | Coping Stone | Non-Suspect Material | - | |
| 69 | Roof A | Coping Stone Mortar | Assumed ACM | 25 SF (300 LF) | Assumed ACM - To be Tested During Construction |
| 70 | Roof A | Coping Stone Caulking | Assumed ACM | 25 SF (300 LF) | Assumed ACM - To be Tested During Construction |
| 71 | Roof A | Coping Stone Flashing | Assumed ACM | 1,200 SF | Assumed ACM - To be Tested During Construction |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|--|---|--|--------------------------------------|--|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 72 | Roof A | Thru-Wall Parapet Flashing | Assumed ACM | 1,200 SF | Assumed ACM - To be Tested During Construction |
| 73 | Roof B | Roof Membrane | Assumed ACM | 80 SF | Assumed ACM - To be Tested During Construction |
| 74 | Roof B | Roof Flashing | Assumed ACM | 85 SF | Assumed ACM - To be Tested During Construction |
| 75 | Roof B | Roof Screed | Assumed ACM | 80 SF | Assumed ACM - To be Tested During Construction |
| 76 | Roof C | Roof Membrane | Assumed ACM | 175 SF | Assumed ACM - To be Tested During Construction |
| 77 | Roof C | Roof Flashing | Assumed ACM | 130 SF | Assumed ACM - To be Tested During Construction |
| 78 | Roof C | Roof Screed | Assumed ACM | 175 SF | Assumed ACM - To be Tested During Construction |
| 79 | Roof D | Roof Membrane | Assumed ACM | 175 SF | Assumed ACM - To be Tested During Construction |
| 80 | Roof D | Roof Flashing | Assumed ACM | 130 SF | Assumed ACM - To be Tested During Construction |
| 81 | Roof D | Roof Screed | Assumed ACM | 175 SF | Assumed ACM - To be Tested During Construction |
| 82 | Roof E | Roof Membrane | Assumed ACM | 5,300 SF | Assumed ACM - To be |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|---|---|--|---------------------------------|-------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| | | | | | Tested During Construction |
| 83 | Roof E | Roof Flashing | Assumed ACM | 610 SF | Assumed ACM - To be Tested During Construction |
| 84 | Roof E | Roof Screed | Assumed ACM | 5,300 SF | Assumed ACM - To be Tested During Construction |
| 85 | Roof E | Cap Flashing Caulking | Assumed ACM | 25 SF (300 LF) | Assumed ACM - To be Tested During Construction |
| 86 | Roof E | Parapet Brick | Non-Suspect Material | - | |
| 87 | Roof E | Parapet Brick Mortar | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907. Same material as exterior brick mortar |
| 88 | Roof E | Parapet Expansion Joint Caulking | Assumed ACM | 3 SF (30 LF) | Assumed ACM - To be Tested During Construction |
| 89 | Roof E | Coping Stone | Non-Suspect Material | - | |
| 90 | Roof E | Coping Stone Mortar | Assumed ACM | 5 SF (50 LF) | Assumed ACM - To be Tested During Construction |
| 91 | Roof E | Coping Stone Caulking | Assumed ACM | 5 SF (50 LF) | Assumed ACM - To be Tested During Construction |
| 92 | Roof E | Coping Stone Flashing | Assumed ACM | 610 SF | Assumed ACM - To be Tested During Construction |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|---|--|---------------------------------|-------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 93 | Roof E | Thru-Wall Parapet Flashing | Assumed ACM | - | Material not to be disturbed by the current scope of work |
| 94 | Roof F | Roof Membrane | Assumed ACM | 350 SF | Assumed ACM - To be Tested During Construction |
| 95 | Roof F | Roof Flashing | Assumed ACM | 180 SF | Assumed ACM - To be Tested During Construction |
| 96 | Roof F | Roof Screed | Assumed ACM | 350 SF | Assumed ACM - To be Tested During Construction |
| 97 | Roof F | Cap Flashing Caulking | Assumed ACM | 8 SF (90 LF) | Assumed ACM - To be Tested During Construction |
| 98 | Roof F | Parapet Brick | Non-Suspect Material | - | |
| 99 | Roof F | Parapet Brick Mortar | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907. Same material as exterior brick mortar |
| 100 | Roof F | Parapet Expansion Joint Caulking | Assumed ACM | 1 SF (15 LF) | Assumed ACM - To be Tested During Construction |
| 101 | Roof F | Coping Stone | Non-Suspect Material | - | |
| 102 | Roof F | Coping Stone Mortar | Assumed ACM | 2 SF (25 LF) | Assumed ACM - To be Tested During Construction |
| 103 | Roof F | Coping Stone | Assumed ACM | 2 SF (25 LF) | Assumed ACM - To be |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|--|---|--|---------------------------------|-------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| | | Caulking | | | Tested During Construction |
| 104 | Roof F | Coping Stone Flashing | Assumed ACM | 90 SF | Assumed ACM - To be Tested During Construction |
| 105 | Roof F | Thru-Wall Parapet Flashing | Assumed ACM | - | Material not to be disturbed by the current scope of work |
| 106 | Roof G | Roof Membrane | Assumed ACM | 350 SF | Assumed ACM - To be Tested During Construction |
| 107 | Roof G | Roof Flashing | Assumed ACM | 180 SF | Assumed ACM - To be Tested During Construction |
| 108 | Roof G | Roof Screed | Assumed ACM | 350 SF | Assumed ACM - To be Tested During Construction |
| 109 | Roof G | Cap Flashing Caulking | Assumed ACM | 8 SF (90 LF) | Assumed ACM - To be Tested During Construction |
| 110 | Roof G | Parapet Brick | Non-Suspect Material | - | |
| 111 | Roof G | Parapet Brick Mortar | Non-ACM | - | As per CES Survey dated 2/5/14 - SID: 46907. Same material as exterior brick mortar |
| 112 | Roof G | Parapet Expansion Joint Caulking | Assumed ACM | 1 SF (15 LF) | Assumed ACM - To be Tested During Construction |

| SUMMARY OF INSPECTION RESULTS FOR ASBESTOS IN SCHOOL: | | | | | |
|---|---|--|---------------------------------|-------------------------------|---|
| Line # | PROPOSED WORK AS PER SCA RENOVATION PLANS | SUSPECT MATERIAL THAT WILL BE IMPACTED | SAMPLING AND INSPECTION RESULTS | QUANTITY OF ASBESTOS MATERIAL | NOTES |
| 113 | Roof G | Coping Stone | Non-Suspect Material | - | |
| 114 | Roof G | Coping Stone Mortar | Assumed ACM | 2 SF (25 LF) | Assumed ACM - To be Tested During Construction |
| 115 | Roof G | Coping Stone Caulking | Assumed ACM | 2 SF (25 LF) | Assumed ACM - To be Tested During Construction |
| 116 | Roof G | Coping Stone Flashing | Assumed ACM | 90 SF | Assumed ACM - To be Tested During Construction |
| 117 | Roof G | Thru-Wall Parapet Flashing | Assumed ACM | - | Material not to be disturbed by the current scope of work |
| | | | | 150 LF 52,180 SF | |

NOTES:

1. No mold was observed on surfaces to be affected by this current scope of work.
2. Any materials not listed or addressed in above table must be assumed to be Asbestos - Containing Materials. The Contractor shall notify the Project Officer immediately if any materials that are not listed are encountered, who will then notify the Authority's Industrial Hygienist for directive.
3. All selective demolition into inaccessible spaces (including, but not limited to, pipe chases, ceiling plenums, soffits, etc,) must be conducted exclusively by the Abatement Contractor,

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cautiously, under controlled conditions, within Modified Tents or Full Containments, in the presence of the Authority's Environmental Consultant.

4. The Asbestos Contractor shall HEPA-vacuum, encapsulate and repair (if necessary), any damaged suspect materials in the immediate vicinity of the work area.
5. The Contractor shall assume that all components in direct contact with concealed and exposed ACM and/or Assumed ACM is contaminated and is to be disposed of as ACM-contaminated waste. In lieu of disposing these materials as such, the Contractor may opt to decontaminate these components (if they are not porous), and dispose of as regular C&D waste, at no additional cost to the Authority.
6. Unless otherwise noted, all caulks / sealants (including concealed/inaccessible), are presumed to be ACM and PCB-containing. The Contractor shall refer to SCA specification section s01900 for additional handling and disposal requirements.
7. All Non-ACM plasters were analyzed in accordance with the NYS ELAP Interim Guidance Document dated May 6, 2016. The re-sampling of pertinent suspect non-ACM materials (as noted) complies with the latest (05/06/16) ELAP Guidance Document and all the noted limitations of current analytical protocols as indicated by ELAP.
8. Asbestos Abatement Contractor may opt to abate all TSI (ACM and Non-ACM) within the containment to expedite the project however, the cost of re-insulating the Non-ACM piping shall be borne solely by the General Contractor. A Change Order will not be issued for this item.
9. Abatement of TSI also includes the abatement of concealed firestopping through walls and floor / ceiling slabs at no additional cost to the Authority.

END OF SECTION

LIST OF SUBMITTAL

| <u>SUBMITTAL</u> | <u>DATE SUBMITTED</u> | <u>DATE APPROVED</u> |
|---|-----------------------|----------------------|
| Pre-Project Submittal: | | |
| 1. Insurance | _____ | _____ |
| 2. Health and Safety Plan | _____ | _____ |
| 3. Emergency Action Plan | _____ | _____ |
| 4. Fall Protection Plan | _____ | _____ |
| 5. Proof that all required permits and variances have been obtained. | _____ | _____ |
| 6. Documentation of Required Qualifications of Workers | | |
| a. Worker certification and License requirements | _____ | _____ |
| b. Proof of medical Surveillance program | _____ | _____ |
| 7. Proof of a respiratory protection program | _____ | _____ |
| 8. Proof of historic airborne fiber data | _____ | _____ |
| 9. Proof that a landfill site has been located. | _____ | _____ |
| 10. Equipment and MSDS of chemicals to be used | _____ | _____ |
| 11. Asbestos Removal and Disposal Work Plan | _____ | _____ |
| 12. Sample of daily log | _____ | _____ |
| During Work Submittal: | | |
| 1. Schedule of Work Changes | _____ | _____ |
| 2. Copy of each "Waste Shipment Record" form | _____ | _____ |
| Post Project Submittal: | | |
| 1. Copy of the bound log book | _____ | _____ |
| 2. Personal air monitoring records pertaining to this project. | _____ | _____ |
| 3. Compilation of all completed and signed Waste Shipment Record forms. | _____ | _____ |
| 4. Copies of notifications | _____ | _____ |

5. to applicable agencies.
Copies of the workers
licenses (NYSDOL and
NYCDEP

* * *