

SECTION 028200 - ASBESTOS REMEDIATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Details requirements for construction and demolition activities affecting Asbestos-Containing Materials (ACM), trace asbestos materials (i.e., building materials containing 1% or less of asbestos), and asbestos-containing waste materials, as shown on the Contract Drawings, specified herein, or required to complete the work. All work under this Section shall be performed using methods, tools, and equipment that have demonstrated effectiveness in preventing asbestos fibers from migrating outside of the Regulated Abatement Work Area and are in compliance with all applicable rules and regulations.
2. In the absence of analytical testing results for certain materials, the material shall be classified as asbestos-containing pending the analytical results. The disturbance, abatement/removal, construction/demolition, and disposal of materials containing asbestos shall be in accordance with federal, state, and local regulations pertaining to asbestos.
3. The Contractor shall perform the abatement and disposal of additional ACM not shown on the Contract Drawings. Unless otherwise specified, the work of this Section shall also be performed in accordance with the m current New York City Department of Environmental Protection (NYCDEP) Environmental Health and Safety (EHS) Policies and Procedures (including Asbestos Management, and Spill Prevention, Environmental Release Reporting and Investigation), and applicable federal, state, and local regulations.
4. Any unforeseen ACM discovered during the work to be performed under this Contract shall be abated in accordance with this Section, and the NYCDEP's Asbestos Control Program Rules and Regulations (RCNY Title 15, Chapter 1) or the New York State Department of Labor's (NYSDOL) Asbestos Rules and Regulations (12 NYCRR 56), and NYCDEP EHS policies and procedures prior to its disturbance. It should be noted that NYCDEP asbestos projects being conducted on New York City property that is physically located outside of the five boroughs, will be subject to the requirements of 12 NYCRR 56, and not the requirements of RCNY Title 15, Chapter 1.
5. All independent third party air monitoring and bulk sampling for suspect material characterization shall be performed under the NYCDEP Construction Management contracts, NYCDEP Requirements Contracts or other NYCDEP contracts.
6. The Contractor shall perform all work under this Section without damaging or contaminating non-regulated areas. Where such areas are damaged or contaminated, as determined by the NYCDEP, the Contractor shall restore the areas to their original condition at no additional cost to the NYCDEP.

1.2 PAYMENT

- A. At the completion of abatement activities, the Contractor is responsible for submitting all of the following required documentation. Payment to abate and dispose of ACM and resulting asbestos-containing waste materials produced by this work will not be made until the following documentation is provided to the NYCDEP:
1. Copies of all NYSDOL and NYCDEP Asbestos Control Program (ACP)-approved asbestos project notifications, work permits, variances, Work Place Safety Plans, and any applicable documentation filed or received from the NYSDOL and NYCDEP ACP, including Notices of Violations (NOV).
 2. Copies of the Asbestos Abatement Contractor's Handling license.
 3. Copies of NYCDEP and NYSDOL Asbestos Handler Supervisor and Asbestos Handler certificates, where applicable, for all workers engaged in the project.
 4. A copy of the Asbestos Abatement Contractor's daily Log book (bound notebook). Copies of laboratory reports and chain-of-custody (COC) documents for exposure monitoring conducted by the Asbestos Abatement Contractor, including the name, address, and New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) registration number of the laboratory used for air sample analysis.
 5. All data related to bulk sampling, including the results of any asbestos surveys performed by a NYCDEP-certified Asbestos Investigator and NYSDOL-certified Asbestos Inspector, where applicable.
 6. The Asbestos Work Plan submitted in accordance with Section 1.5 of this Specification.
 7. The total quantity of ACM abated.
 8. The start and completion dates of the Asbestos Project(s).
 9. A signed copy of the manifest from the asbestos-permitted landfill with complete COC documentation, certifying the amount of asbestos waste delivered.
 10. The name and address of the asbestos waste transporter.

1.3 REFERENCES

- A. The Contractor shall comply with all applicable regulations, standards, and guidelines of federal, state, and local environmental and occupational safety and health agencies regarding ACM, trace asbestos materials, and asbestos-containing waste materials. These regulations, standards, and guidelines include, but are not limited to the following:
1. New York City Department of Environmental Protection (NYCDEP):
 - a. RCNY Title 15 Chapter 1 - Asbestos Control Program Rules and Regulations.

- b. RCNY Title 15 Chapter 19 - Discharges of Wastewater and Other Materials to Public Sewers.
 - c. Environmental Health and Safety (EHS) Policies and Procedures - Vol. II, Spill Prevention, Environmental Release Reporting and Investigation.
 - d. Environmental Health and Safety Policies and Procedures - Vol. III, Asbestos Management.
- 2. New York State Department of Labor (NYSDOL):
 - a. 12 NYCRR 56 - Asbestos Rules and Regulations
- 3. ASTM International:
 - a. ASTM E 1368 - Standard Practice for Visual Inspection of Asbestos Abatement Projects.
 - b. ASTM P 189 - Specification for Encapsulants for Friable Asbestos Containing Building Materials Proposal.
- 4. U. S. Department of Transportation:
 - a. 49 CFR 171 - General Information, Regulations, and Definitions.
 - b. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response information, and Training Requirements.
 - c. 49 CFR 173 - Shippers: General Requirements for Shipments and Packaging's.
 - d. 49 CFR 178 - Specifications for Packaging.
- 5. Environmental Protection Agency (EPA):
 - a. 40 CFR 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP).
 - b. 40 CFR 268 - Land Disposal Restrictions.
 - c. 40 CFR 302 - Designation, Reportable Quantities, and Notification.
 - d. 40 CFR 763 - Asbestos Hazard Emergency Response Act (AHERA).
- 6. National Institute for Occupational Safety and Health (NIOSH):
 - a. Method 7400 - Asbestos and Other Fibers by PCM.
 - b. Method 7401 - Asbestos by TEM.
 - c.

7. New York City Department of Sanitation (DSNY):
 - a. RCNY Title 16 Chapter 8 - Asbestos Rules and Regulations.
8. New York State Department of Environmental Conservation (NYSDEC):
 - a. 6 NYCRR 360 - Solid Waste Management Facilities
 - b. 6 NYCRR 364 - Waste Transporter Permits.
 - c. 6 NYCRR 376 - Land Disposal Restrictions.
9. New York State Department of Health (NYSDOH):
 - a. 10 NYCRR 55-2 - Approval of Laboratories Performing Environmental Analysis.
10. Occupational Safety and Health Administration (OSHA):
 - a. 29 CFR 1910 - Occupational Safety and Health Standards.
 - b. 29 CFR 1910.28 - Safety Requirements for Scaffolding.
 - c. 29 CFR 1926.65 - Hazardous Waste Operations and Emergency Response.
 - d. 29 CFR 1910.134 - Respiratory Protection Standard.
 - e. 29 CFR 1910.1001 - Asbestos Standard for General Industry.
 - f. 29 CFR 1910.1200 - Hazard Communication Standard.
 - g. 29 CFR 1926 - Safety and Health Regulations for Construction.
11. Underwriters Laboratories, Inc. (UL):
 - a. UL 586 - Standard for Safety High-Efficiency, Particulate, Air Filter Units.
12. American National Standards Institute (ANSI)
 - a. ANSI Publication Z88.2 - Practices for Respiratory Protection.

1.4 DEFINITIONS

A. Explanation of Terms:

1. **Abatement:** Any and all procedures physically taken to control fiber releases from Asbestos-Containing Materials (ACM). This includes removal, encapsulation, enclosure, cleanup, and repair.
2. **Adequately Wet:** Defined by the EPA (40 CFR 61.141) as a material sufficiently mixed or penetrated with amended water to prevent the release of visible emissions. If visible

emissions are observed coming from an Asbestos-Containing Material (ACM) or asbestos waste, then the material has not been “adequately wetted.” However, the absence of visible emissions is not evidence of being adequately wet. ACM must be fully penetrated with the wetting agent to be adequately wet. If the ACM being abated is resistant to amended water penetration, the wetting agent shall be applied to the material prior to and during abatement as necessary to minimize the potential for fiber releases.

3. **Aggressive Air Sampling:** A method of sampling within a Negative Pressurized Enclosure (NPE) in which mechanical equipment is used before and during the sampling period to stir up settled dust/asbestos fibers. Mechanical equipment includes 20-inch fans and forced air equipment (e.g., a one-horsepower leaf blower).
4. **Airlock:** "Airlock" shall mean a system for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least three feet such that one passes through one doorway into the airlock, allowing the doorway sheeting (polyethylene) to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
5. **Air Filtration Units:** A local exhaust unit, utilizing high-efficiency particulate air (HEPA) filtration and capable of maintaining a minimum negative pressure differential of 0.05 mm of water within the containment barrier with respect to that of the environment surrounding the containment barrier. The unit also cleans recirculated air or generates a constant air flow from adjacent areas into the abatement work area through the decontamination enclosure.
6. **Air Monitoring (sampling):** The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Science and Technology which are utilized for lower detectability and specific fiber identification.
7. **Air Pressure Monitoring:** The process of measuring the air pressure differential between the containment barrier and the surrounding area using a micromanometer unit.
8. **Air Sampling Technician:** A person who performs asbestos project air sampling and possesses a valid Air Sampling Technician certificate issued by the NYSDOL.
9. **Ambient Air Monitoring:** The measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the work site, performed in accordance with NIOSH or EPA sampling methodologies.
10. **Amended Water:** Water to which a surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate asbestos containing materials (ACM).
11. **Asbestos:** Asbestiform varieties of chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

12. **Asbestos Abatement Contractor:** A contractor licensed by the NYSDOL who performs abatement during an Asbestos Project, or employs persons performing such abatement.
13. **Asbestos Abatement Permit:** A permit issued by the NYCDEP Asbestos Control Program (ACP) in accordance with RCNY Title 15, Chapter 1, authorizing the performance of construction work for Asbestos Projects involving any of the activities defined in RCNY Title 15, Chapter 1-26(a) (1)-(13).
14. **Asbestos Assessment Report (Form ACP-5):** A form submitted to the NYCDEP Asbestos Control Program (ACP) by which a NYCDEP-certified Asbestos Investigator certifies that a building or structure (or portion thereof) is free of Asbestos-Containing Materials (ACM) or the amount of ACM to be abated constitutes a Minor Asbestos Project.
15. **Asbestos-Containing Material (ACM):** Any material containing more than 1% asbestos by volume of any type or mixture of types.
16. **Asbestos Handler:** An individual certified by the NYCDEP and/or NYSDOL who disturbs, removes, encapsulates, repairs, or encloses Asbestos-Containing Materials (ACM). Asbestos Handlers working on projects within the five boroughs shall possess both NYCDEP and NYSDOL certifications. Asbestos Handlers working on projects outside of the five boroughs shall possess NYSDOL certifications.
17. **Asbestos Handler Supervisor:** An individual certified by the NYCDEP and/or NYSDOL who supervises the Asbestos Handlers during an Asbestos Project, and ensures that proper asbestos abatement procedures as well as individual safety procedures are being adhered to. Asbestos Handler Supervisors working on projects within the five boroughs shall possess both NYCDEP and NYSDOL certifications. Asbestos Handler Supervisors working on projects outside of the five boroughs shall possess NYSDOL certifications.
18. **Asbestos Project:** Any work performed in connection with the alteration, renovation, modification, or demolition of 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 involve the abatement, disturbance, or cleanup of friable or non-friable asbestos. Asbestos Projects are classified as either Large Asbestos Projects, Small Asbestos Projects, or Minor Asbestos Projects in New York State and New York City, and each type of project involves several phases, which can include: background air monitoring, mobilization, pre-abatement/containment construction, abatement, cleaning/re-cleaning, final clearance air monitoring, containment breakdown, and demobilization.
19. **Asbestos Project Notification (Form ACP-7):** A form submitted to the NYCDEP Asbestos Control Program (ACP) for all Large Asbestos Projects and Small Asbestos Projects. Minor Asbestos Projects do not require an ACP-7 form.
20. **Asbestos-Containing Waste Material:** Asbestos-Containing Material (ACM) or asbestos-contaminated objects requiring disposal.

21. **Authorized Visitor:** "Authorized visitor" shall mean the building owner and his/her representative, and any representative of a regulatory or other agency having jurisdiction over the project.
22. **Building Materials:** Any and all material as Presumed Asbestos Containing Materials (PACM) and Suspect Miscellaneous ACMs listed in 12 NYCRR 56-5.1(f)(1), including but not limited to interior and exterior finished, equipment, plaster, roofing, flooring, caulking, sealants, tiles, insulation, and mortar and refractory bricks used in the construction of boilers.
23. **Caulking:** High-grade rubber base caulk for masonry and/or for other materials to be used.
24. **Chain of Custody:** "Chain of custody" shall mean the form or set of forms that document the collection and transfer of a sample.
25. **Clean Room:** An uncontaminated area or room which is part of the abatement worker/equipment decontamination enclosure, with provisions for storage of workers' or visitors' street clothing, protective equipment and uncontaminated materials and equipment. It may be used for changing clothes.
26. **Clearance Air Monitoring:** Area air monitoring performed inside the Restricted Area and Regulated Abatement Work Area after the completion of the final cleaning, final waiting period, and final visual inspection by the Asbestos Handler Supervisor and Project Monitor. Aggressive Air Sampling shall be performed as part of the clearance air monitoring activities inside of the Containment.
27. **Containment:** The Negative-Pressurized Enclosure (NPE) within the Restricted Area, which establishes the Regulated Abatement Work Area, and surrounds the location where the asbestos abatement is actually taking place, a temporary enclosure constructed with fire-retardant plastic sheeting, suitable framing, tape and other adhesives (as defined in Plastic Sheeting and Tape). This barrier serves to confine the asbestos abatement and decontamination work, and to contain the release of asbestos containing dust and debris through the action of pressure differential ventilation and air filtration systems. The only entrance is via the Personal Decontamination Enclosure System.
28. **Critical Barrier:** A term used by the NYSDOL to define those portions of the containment barrier which represent the minimum structural components necessary to maintain the asbestos removal area in airtight isolation from the surrounding areas. Critical barriers shall be placed at floors, windows, ventilation louvers and other openings as necessary to achieve abatement work area isolation before putting up the double-layer plastic sheeting containment enclosure within which abatement work is performed. If a temporary plastic sheeting/stud wall must be erected, it shall be treated as a critical barrier. The double-layer plastic sheeting containment enclosure shall then be erected on that wall. Wrappings on lights, control boxes, etc., do not constitute part of the critical barrier.
29. **Curtained Doorway:** A minimum 2-flap passageway to allow access or egress from one room to another while permitting minimal air movement between the rooms of the decontamination enclosure system. It is constructed by placing 2-3 overlapping sheets of

plastic sheeting at least three feet wide over an existing or temporarily framed doorway. The sheets shall be weighted at the bottom so that they close quickly after being released.

30. **Disposal Bag:** A properly labeled minimum 0.15 mm thick, leak-tight plastic bag used for transporting asbestos waste from the abatement work area to an EPA-approved disposal site for ACM waste.
31. **Disturbance:** Contact which releases fibers from ACM or presumed asbestos-containing material (PACM) or debris containing ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 1.52 m in length and width.
32. **Encapsulant (sealant) or Encapsulating Agent:** A liquid material which can be applied to asbestos-containing material which temporarily controls the possible release of asbestos fibers from the material or surface either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant). 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.
33. **Equipment Room:** A contaminated area or room which is part of the decontamination enclosure, with provisions for storage of contaminated clothing and equipment and cleaning supplies for decontamination of equipment. Airlocks are required at all entrances to the equipment room.
34. **Excursion Limit:** Defined in the OSHA Asbestos Standard for the Construction Industry (29 CFR 1926.1101) as individual exposure, without regard to the use of respirators, to an airborne concentration of asbestos fibers of 1.0 fiber per cubic centimeter of air (1.0 f/cc) averaged over a 30-minute sampling period. No employee of the Contractor shall at any time be exposed to concentrations of asbestos fibers above the Excursion Limit.
35. **Exposure Monitoring:** Personal air sampling performed outside the respirator within the breathing zone of individuals, for the purpose of determining compliance with OSHA's Asbestos Standard for the Construction Industry (29 CFR 1926.1101). Analytical results from exposure monitoring will be used to select appropriate respiratory protection and Personal Protective Equipment (PPE) for individuals within a Restricted Area and Regulated Asbestos Work Area. For the purpose of this Section, exposure monitoring samples shall be collected from individuals who are representative of each task being conducted by the Contractor, and all exposure monitoring shall follow pertinent NIOSH or EPA sampling methodologies.
36. **Fiber:** A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.

37. **Final Visual Inspection:** An inspection performed by the Project Monitor and Asbestos Handler Supervisor at the completion of the final waiting period on an Asbestos Project (but prior to Clearance Air Monitoring). The inspection is performed in accordance with ASTM E1368 to determine the completeness of abatement and cleanup.
38. **Friable Asbestos:** A term used by the NYSDOL to define any Asbestos-Containing Material (ACM) or asbestos waste that can be crumbled, pulverized or reduced to powder when dry, by hand pressure.
39. **Glove Bag:** A manufactured, impervious, bag-like enclosure, typically constructed of a minimum 0.15 mm thick, 1.5 m x 1.5 m (maximum), transparent polyethylene or polyvinylchloride plastic, with inward projecting sleeve gloves to abate ACM in a sealed micro-environment with designated inlets for amended water and sealant application, and a HEPA filtered vacuum unit attachment. The enclosure has capacity for tool storage and to hold removed ACM.
40. **High-Efficiency Particulate Air (HEPA) Filter:** A filter designed to remove 99.97% of all particles greater than 0.3 micrometers mass median aerodynamic equivalent diameter. For the purpose of this Section, HEPA vacuum and negative air pressure equipment (i.e., microtraps) used by the Contractor shall meet the Standard for Safety High-Efficiency, Particulate, Air Filter Units (UL 586) developed by Underwriters Laboratories.
41. **HEPA-Filtered Vacuum Cleaner:** HEPA-filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers.
42. **Holding Area:** A room or area in the Waste Decontamination Enclosure System utilized for the temporary (i.e., no longer than the current work shift) storage of containerized asbestos waste, prior to its transfer to a final on-site storage container (i.e., dumpster, trailer, or roll-off) or a licensed asbestos waste transport vehicle. The holding area is located between the washroom and an uncontaminated area.
43. **Impermeable Waste-Disposal Containers:** Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.
44. **Independent Third Party Monitor:** A NYSDOL-licensed asbestos contractor who must be contracted by the property owner, and is completely independent of the Asbestos Abatement Contractor involved with the Asbestos Project. The independent third party who conducts air monitoring or project monitoring on an Asbestos Project shall not have any business, personal, or other relationship with the Asbestos Abatement Contractor.
45. **Isolation Barrier:** A term used to define the construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the Regulated Abatement Work Area from surrounding areas and contain asbestos fibers.
46. **Large Asbestos Project:** An Asbestos Project involving the removal, enclosure, encapsulation, repair, disturbance, cleanup, or handling of 260 linear feet or more of Asbestos-Containing Materials (ACM), or 160 square feet or more of ACM.

47. **Lockdown:** The process of applying encapsulant as a finishing coat to abated surfaces after project has successfully passed final air clearance tests and the Asbestos Handler Supervisor has authorized removal of containment.
48. **Log:** An official record, maintained by the Asbestos Abatement Contractor, of all activities that occurred during the Asbestos Project. The Log shall be in the form of a bound notebook, and at a minimum, identify the following information: (a) the building owner, agent, contractor, and workers; (b) daily activities, cleanings, and waste transfers; (c) the names and certificate numbers of all asbestos handlers and asbestos handler supervisors; (d) the results of inspections of decontamination systems, barriers, and negative pressure ventilation equipment; (e) summaries of all corrective actions and repairs; (f) work stoppages with reasons for stoppages; (g) manometer readings at least twice per work shift; (h) daily checks of emergency and fire exits; (i) any unusual events.
49. **Microtrap:** (See definition of “Negative Air Pressure Equipment”).
50. **Minor Asbestos Project:** An Asbestos Project involving the removal, enclosure, encapsulation, repair, disturbance, cleanup, or handling of 25 linear feet or less of Asbestos-Containing Materials (ACM), or 10 square feet or less of ACM.
51. **Negative Exposure Assessment (NEA):** A demonstration by the contractor, which complies with the criteria in OSHA 29 CFR 1926.1101(f) (2) (iii), that employee exposures during an operation are expected to be consistently below the permissible exposure limits (PELs). Such assessment is to be used to justify level of respiratory protection to be used on the job.
52. **Negative Air Pressure Equipment:** A local exhaust system capable of maintaining air pressure within the Containment at a lower pressure than the air outside of the Containment. The negative air pressure equipment also provides for the HEPA filtration of all air exhausted from the Containment.
53. **NESHAPS:** National Emissions Standard for Hazardous Air Pollutants.
54. **NYCDEP:** New York City Department of Environmental Protection.
55. **NYSDOL:** New York State Department of Labor.
56. **Non-Friable Asbestos:** A term used by the NYSDOL to define any Asbestos-Containing Material (ACM) or asbestos waste that cannot be crumbled, pulverized or reduced to powder when dry, by hand pressure.
57. **Obstruction:** 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 (i.e., a knife or razor blade) 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 feet wide.
58. **OSHA Monitoring:** (See definition of “Exposure Monitoring”).

59. **P-100 Filter:** (See definition of: “High-Efficiency Particulate Air (HEPA) Filter”).
60. **PACM:** Presumed Asbestos-Containing Material, meaning thermal system insulation and surfacing material found in buildings constructed no later than 1980.
61. **Perimeter Monitoring:** (See definition of “Area Monitoring”).
62. **Permissible Exposure Limit (PEL):** Defined in the OSHA Asbestos Standard for the Construction Industry (29 CFR 1926.1101) as individual exposure, without regard to the use of respirators, to an airborne concentration of asbestos fibers of 0.1 fibers per cubic centimeter of air (f/cc) calculated as an 8-hour Time-Weighted Average (TWA). No employee of the Contractor shall at any time be exposed to concentrations of asbestos fibers above the PEL.
63. **Personal Decontamination Enclosure System:** A series of connected rooms with curtained doorways between each room, for the decontamination of Asbestos Handlers, equipment/materials, and other authorized individuals into the Regulated Abatement Work Area from uncontaminated areas. A decontamination enclosure system contains a minimum of three (3) separate rooms (typically with airlocks located between the rooms) consisting of an equipment room, shower room, and clean room. The system is constructed of an air-tight, impermeable, temporary barrier. Framing for enclosure shall be metal or fire retardant pressure impregnated wood.
64. **Personal Monitoring:** Sampling of asbestos fiber concentrations within the breathing zone of an employee. Breathing zone is defined as a radius of 150 mm to 250 mm around the employee's head.
65. **Personal Protective Equipment (PPE):** Equipment which may consist of coveralls, shoes, gloves, helmet, goggles, and respirator used for protection against asbestos exposure.
66. **Phase Contrast Microscopy (PCM):** An analytical method (e.g., NIOSH 7400) used for determining the asbestos fiber concentration in an air sample.
67. **Plastic Sheeting:** Fire retardant Polyethylene sheet material with 6-mil thickness or greater, in sizes to minimize the frequency of joints used for protection of walls, floors, etc., and critical barriers in the abatement work area.
68. **Polarized Light Microscopy (PLM):** An analytical method (e.g., 40 CFR 763, Subpart F, Appendix A or ELAP Item 198.1 or 198.6) used for determining the asbestos content in a bulk material.
69. **Post Abatement Air Monitoring:** (See definition of “Clearance Air Monitoring”).
70. **Presumed Asbestos-Containing Material (PACM):** Thermal System Insulation (TSI) and surfacing material found in buildings constructed no later than 1980.
71. **Project Designer:** A person who performs asbestos project design functions and possesses a valid Project Designer certificate issued by the NYSDOL.

72. **Project Monitor:** A person who performs asbestos project monitoring functions and possesses a valid Project Monitor certificate issued by the NYSDOL.
73. **Protection Factor:** The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
74. **Regulated Abatement Work Area:** The portion of the Restricted Area where abatement work actually occurs. This includes the interior of the Restricted Area Containment enclosure. For glovebag operations, the areas contiguous to where the operation takes place are Regulated Abatement Work Areas. For tents, the interior of each tent is a Regulated Abatement Work Area. For exterior, non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or Containment enclosures, the entire Restricted Area surrounding the abatement location is considered to be the Regulated Abatement Work Area.
75. **Removal:** The stripping of any Asbestos-Containing Materials (ACM) from surfaces or components of a building or structure.
76. **Repair:** A term used by the NYCDEP to define a corrective action using specified work practices (e.g., glovebags or tents) to minimize potential asbestos fiber releases from minimally damaged Asbestos-Containing Materials (ACM).
77. **Respirator:** A device designed to protect the wearer from the inhalation of harmful atmospheres and approved by NIOSH or MSHA for a specific category of use.
78. **Restricted Area:** An area established and marked for the abatement portion of an Asbestos Project. The area shall include, but not be limited to, Regulated Abatement Work Areas and any contiguous decontamination enclosure systems, adjoining staging areas where work materials, debris, or waste materials from such work may accumulate, and waste storage areas (e.g., dumpsters, trailers, or roll-offs).
79. **Shower Room:** A room between the clean room and the equipment room in the Personal Decontamination Enclosure System set up to prevent cross-contamination by ensuring the removal of potential asbestos contamination from the body that may have accumulated during abatement operations. The shower room shall have hot and cold running water controllable at the tap, shall be arranged for complete showering during decontamination, and shall include clean, dry towels, soap, and shampoo in quantities sufficient to accommodate the personnel working on the Asbestos Project.
80. **Small Asbestos Project:** An Asbestos Project involving the removal, enclosure, encapsulation, repair, disturbance, cleanup, or handling of more than 25 linear feet but less than 260 linear feet of Asbestos-Containing Materials (ACM), or more than 10 square feet but less than 160 square feet of ACM.
81. **Surfactant:** A chemical wetting agent added to water to decrease surface tension and improve material penetration.

82. **Suspect Asbestos-Containing Material (ACM):** All friable and non-friable materials suspected of containing asbestos as determined by a certified NYSDOL Asbestos Inspector or certified NYCDEP Asbestos Investigator, which have not been sampled and analyzed for asbestos content. Suspect ACM includes Presumed Asbestos-Containing Materials (PACM).
83. **Tape:** Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions, including use of amended water. Minimum tape width shall be 51 mm.
84. **Tent:** (See definition of “Containment”).
85. **Transmission Electron Microscopy (TEM):** An analytical method (e.g., 40 CFR 763, Subpart F, Appendix A or ELAP Item 198.4) used for determining the asbestos fiber concentration in an air sample, or for determining the asbestos content in a bulk material.
86. **Trace Asbestos-Containing Material:** A building material that contains less than or equal to 1% of asbestos.
87. **Variance:** Relief from specific requirements set forth in state or local asbestos regulations, which is granted in writing by the agency that enforces the regulations.
88. **Visible Emission:** Any emission containing particulate material that can be seen without the aid of instruments.
89. **Warning Labels and Signs:** As required by OSHA regulations 29 CFR 1910.1001 and 1926.58.
90. **Waste Water Filters:** Discharged liquids shall pass through a primary filter and the output shall be particles 20 microns or smaller. The secondary filter shall have output particles 5 microns or smaller.
91. **Wet Cleaning:** The process of eliminating asbestos contamination from surfaces, equipment, or other objects by using cloths, mops, or other cleaning tools that have been saturated with amended water.
92. **Worker Decontamination Enclosure System:** (See definition of “Personal Decontamination Enclosure System”).
93. **Work Place Safety Plan:** Construction documents prepared by a registered design professional and submitted for review to the NYCDEP Asbestos Control Program (ACP) in order to obtain an Asbestos Abatement Permit. The 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.

1.5 SUBMITTALS

A. Within 30 business days of the “Notice to Proceed” or as directed by the *Design Professional of Record*, the Contractor shall submit the following:

1. Asbestos Work Plan: Each Contractor that will disturb ACM during the course of work to be performed under this Section shall submit a detailed, project-specific Asbestos Work Plan that addresses work procedures and equipment to be used during the disturbance, abatement, removal, handling, collection, cleanup, and disposal of ACM and asbestos-containing waste materials. The Asbestos Work Plan shall be prepared in accordance with RCNY Title 15, Chapter 1 or 12 NYCRR 56, and all other pertinent federal, state, and local regulations. In addition, the Asbestos Work Plan shall follow all NYCDEP EHS Policies and Procedures (referenced in Article 1.3 of this Section), and shall be coordinated with the Responsible Individual or Responsible Personnel from the NYCDEP Bureau EHS. The Asbestos Work Plan shall also be signed and dated by a NYSDOL-certified Project Designer meeting the qualifications set forth in Article 1.4 of this Section. A copy of the Project Designer’s current NYSDOL certification shall be attached to the Work Plan. The Asbestos Work Plan shall include the following elements:

a. Asbestos Control:

- 1) Drawings showing or Scope of Work indicating the location and details of the following: (a) each Regulated Asbestos Work Area; (b) the type, location, and number of negative air pressure machines that will be used, as well as all exhaust locations; (c) proposed electrical hookups and temporary electrical panels; (d) proposed water hookups; (e) each Restricted Area; (f) each Personal Decontamination Enclosure System; (g) each Waste Decontamination Enclosure System; (h) each waste storage area (e.g., dumpster, trailer, or roll-off); (i) restroom areas; (j) areas designated for eating and drinking.
- 2) A detailed discussion regarding the interfacing of trades (i.e., how the Contractor will coordinate the work with other contractors or NYCDEP employees working at the site) and the sequencing of asbestos-related work.
- 3) A detailed discussion regarding the collection, handling procedures, cleanup, and disposal of asbestos-containing waste materials (including the collection, filtering, and disposal of wastewater).
- 4) A detailed discussion regarding the procedures and methodologies that will be used to conduct exposure monitoring. Provide the name and qualifications (i.e., training and experience documentation) of the individual who will be responsible for conducting the exposure monitoring.
- 5) A detailed discussion regarding housekeeping procedures to be used for maintaining clean Regulated Abatement Work Areas, clean Restricted Areas, and clean decontamination enclosure systems.
- 6) detailed discussion regarding the specific methods and procedures that will be used to control fiber releases, and ensure that fiber concentrations less than or equal to the clearance and action criteria of 0.01 f/cc of air, or background levels (whichever are greater), are not exceeded outside of each

Regulated Abatement Work Area. For projects conducted outside of the five boroughs of New York City, the clearance and action criteria is less than 0.01 f/cc; of air, or background levels (whichever is greater).

- 7) A detailed task analysis for each work activity that has the potential to disturb ACM or asbestos-containing waste materials. Each task analysis shall include, but is not limited to, the following information: (a) the type of work activity; (b) the tools/equipment that will be used; (c) operation and maintenance practices and procedures that will be used for the tools/equipment; (d) the types of ACM that will be disturbed, or asbestos-containing waste materials that may be generated when performing the activity; (e) the engineering controls that will be used to control the spread of asbestos fibers during the activity; (f) the proposed crew size for the activity and individual employee responsibilities during the activity; (g) housekeeping procedures that will be used during the activity; (h) Personal Protective Equipment (PPE) and proposed respiratory protection that will be used for the activity.
 - 8) Equipment and Supplies: Identify the materials and equipment that will be used to perform the work, including materials and equipment designed to be non-combustible or fire retardant in accordance with the National Fire Protection Association (NFPA) Standards 701 and 255. Materials and equipment utilized for abatement activities that take place within the five boroughs, shall conform to RCNY Title 15 Chapter 1-61.
 - 9) Rental Equipment Notification: If rental equipment is to be used during the work, the Contractor shall notify the rental agency in writing concerning the intended use of the equipment, and shall develop and submit an equipment decontamination plan to the Engineer for review and approval prior to the start of work.
 - 10) Material Safety Data Sheets (MSDSs): Provide MSDSs for all chemical products (including wetting agents and encapsulant) to be used for the work.
- b. Waste Management:
- 1) A description of the types of ACM and asbestos-containing waste materials associated with the work (include details regarding whether the materials are friable or non-friable).
 - 2) The estimated quantity of each waste stream that will be generated.
 - 3) The name, address, phone number, and qualifications of each vendor and facility that will be transporting, storing (including transfer stations), or disposing of the wastes. Include a 24-hour phone contact for each vendor and facility.
 - 4) Current permit documentation for the disposal facility indicating that the facility is approved by federal, state, and local regulatory agencies to receive asbestos-containing waste materials. The documentation shall include an

- “acceptance letter” from the facility indicating its ability to accept the specific asbestos waste streams that will be generated during this Contract work.
- 5) Current 6 NYCRR 364 permit documentation for the waste transporter that will transport asbestos-containing waste materials from the work site to the disposal facility. The documentation shall clearly indicate the transporter’s ability to deliver the asbestos-containing waste materials to the chosen disposal facility.
 - 6) Spill prevention, containment, and cleanup contingency measures to be implemented during the work, as well as procedures to be followed during a suspected fiber release or emergency situation. All measures and procedures shall be in accordance with Article 1.3.
 - 7) A detailed discussion of the on-site handling, storage, removal, cleanup, and disposal of waste materials. This discussion shall include, but is not limited to, the following: (a) the methods of demarcation that will be used to identify the waste storage areas and each waste bag/container; (b) the methods and procedures that will be used to collect and containerize wastes on a daily basis; (c) the types of bags/containers that will be used to containerize the wastes; (d) the posting of weekly waste inspection records as defined in Article 1.5 of this Section.
- c. The name and qualifications (i.e., experience and training documentation) of the Asbestos Handler Supervisor who will be responsible for the oversight and execution of the Asbestos Control Plan during activities affecting ACM. At a minimum, the Asbestos Handler Supervisor shall satisfy the requirements set forth in Article 1.6 of this Section, and shall be onsite during all activities affecting ACM.
 - d. Asbestos Abatement Project Notifications and Permits: Submit completed permits and notifications to the Engineer for review and approval prior to submittal to the applicable agencies. All Large Asbestos Projects and Small Asbestos Projects that take place within the five boroughs are required to follow notification and permitting procedures per RCNY Title 15, Chapter 1. All Large Asbestos Projects require notification procedures per 12 NYCRR 56. Documents that may be required based upon the scope and location of the project include, but are not limited to, the following:
 - 1) EPA Large Asbestos Project Notification.
 - 2) NYCDEP Asbestos Assessment Report (Form ACP-5)
 - 3) NYCDEP Asbestos Project Notification (Form ACP-7)
 - 4) NYCDEP Asbestos Project Amendment (Form ACP-8)
 - 5) NYCDEP Asbestos Variance Application (Form ACP-9)

- 6) NYCDEP Asbestos Technical Review Unit Permit (A-TRU Permit).
 - 7) NYCDEP Work Place Safety Plan.
 - 8) NYSDOL Asbestos Project Notification
 - 9) NYSDOL Asbestos Variance Application
- e. A detailed schedule for the implementation of the Asbestos Work Plan elements. The schedule shall address the different phases of the Asbestos Project, including the projected start and completion dates for work area preparation, gross removal and abatement, cleanings, clearance air monitoring, and demobilization activities.
- f. Medical Surveillance: For all activities that take place within a Regulated Abatement Work Area, the Contractor shall provide a sufficient number of properly trained, experienced, and certified workers, each of whom shall: (a) have received a medical exam that included a Pulmonary Function Test (PFT) within the past year; (b) have received written medical clearance within the past year, by a licensed physician, to wear a respirator; (c) have received a qualitative or quantitative respirator fit-test within the past year for the specific respirator the employee will be using for this work.
- g. Employee Documentation: For all activities that take place within a Regulated Abatement Work Area, the Contractor shall provide a sufficient number of properly trained, experienced, and certified workers, each of whom shall: (a) have current NYSDOL-issued and NYCDEP-issued asbestos certificates shall be considered proof of training; (b) documentation for Asbestos Handlers and Asbestos Handler Supervisors that will be used for each Asbestos Project, indicating work experience as defined in Article 1.6 of this Section; (c) dates and written proof of initial medical surveillance and all subsequent examinations by the Contractor or other employer within the past year, and proof that the employee is currently participating in the employer's ongoing medical surveillance program in accordance with Article 1.5 of this Section; (d) dates and written proof of respiratory clearance and a completed medical exam in accordance with Article 1.5 of this Section; (e) dates and written proof of a respirator fit-test in accordance with Article 1.5 of this Section.
- h. A current (i.e., within the last month) signed and notarized statement disclosing all of the Contractor's Occupational Safety and Health Administration (OSHA), EPA, NYSDOL, NYCDEP, New York City Department of Sanitation (DSNY), and Department of Transportation (DOT) citations/violations on Asbestos Projects within the past three (3) years. If the Contractor will be using a subcontractor, a current signed and notarized statement disclosing all of the subcontractor's OSHA, EPA, NYSDOL, NYCDEP, DSNY, and DOT citations/violations on asbestos projects within the past three (3) years will also be required.
- i. A current (i.e., within the last month) signed and notarized statement disclosing all of the Asbestos Handler Supervisor's NYSDOL and NYCDEP citations/violations on Asbestos Projects within the past three (3) years.

- j. Analytical Laboratory Qualifications for Analyzing Air Samples: Submit the name, address, and telephone number of each analytical laboratory selected to perform the analyses of all air samples collected for exposure monitoring purposes. The analytical laboratory shall be currently accredited by the American Industrial Hygiene Association (AIHA) and NYSDOH ELAP. Provide copies of current AIHA and ELAP certificates along with dates of accreditation/reaccreditation. ELAP certificates should show evidence of certification for the specific analytical methods that will be used.
 2. Documentation: Complete documentation of all exposure monitoring activities shall be in accordance with the following Section.
 3. The Contractor shall submit all exposure monitoring results to the NYCDEP within 24 hours from when the air samples were collected.
- B. Logs and Recordkeeping: During all work performed under this Section, the Contractor shall maintain and provide the following documentation:
1. Exposure Monitoring Documentation: Exposure monitoring documentation shall be created and shall be made available to the NYCDEP immediately upon request. All laboratory analytical results shall be accompanied by complete Certificate of Completion (COC) documentation.
 - a. The exposure monitoring documentation shall be signed by the individual who generated the documentation. The content of the documentation shall include, but is not limited to, the following information: (a) sample “start” and “stop” times; (b) flow rates (initial and final) for each sample; (c) the total volume of air collected for each sample; (d) names of individuals being sampled along with the specific work task each individual is performing; (e) specific respiratory protection and PPE worn by each individual; (f) types (i.e., makes and models) of sampling equipment used; (g) types of sample media (i.e., filters and cassettes) used; (h) the most recent calibration dates, along with the calibration results, for the sampling equipment used; (i) name of the individual who conducted the exposure monitoring; (j) dates that the exposure monitoring was conducted; (k) work tasks being performed adjacent to the Restricted Area during the exposure monitoring; (l) unique sample numbers used to identify each sample; (m) the phase of the Asbestos Project being performed (i.e., background, pre-abatement, abatement, cleaning, or clearance).
 2. Waste Manifest Documentation: Completed and signed waste manifests from the approved, asbestos-permitted landfill, shall be provided to the NYCDEP within ten (10) business days of disposal. In addition, on-site waste storage areas shall be inspected weekly by the Asbestos Handler Supervisor.
 3. Waste Storage Area Inspection Documentation: Each weekly waste storage area inspection shall be documented in the Asbestos Abatement Contractor’s bound Log. The Log shall be signed by the Asbestos Handler Supervisor, and shall be made available to the NYCDEP immediately upon request. The content of this documentation shall include, but is not limited to, the following information: (a) the name of the individual that conducted the inspection; (b) descriptions of waste streams being stored; (c) types

and quantities of waste containers being used; (d) the current disposal status (i.e., when the waste container is scheduled to be removed from the work site) and physical condition of each waste container; (e) the present condition of each waste storage area; (f) the presence/absence of proper labeling for each waste container in accordance with Article 3.5 of this Section and federal, state, and local regulations.; (g) the methods being used to secure/lock each waste storage area to prevent unauthorized entry.

4. Asbestos Project Inspection Documentation: Regulated Abatement Work Areas and Restricted Areas shall be inspected daily by the Asbestos Handler Supervisor.
 - a. Each daily asbestos project inspection shall be documented in the Asbestos Abatement Contractor's bound Log. The Log shall be signed by the Asbestos Handler Supervisor, and shall be made available to the NYCDEP immediately upon request. The content of the Log shall include, but is not limited to, the following information: (a) the type of Asbestos Project (i.e., Large Asbestos Project, Small Asbestos Project, or Minor Asbestos Project) being conducted; (b) the current phase of the Asbestos Project (i.e., mobilization, background pre-abatement, abatement, cleaning, clearance air monitoring, or containment breakdown); (c) the names of the Asbestos Handlers, Asbestos Handler Supervisors, Project Monitors, and Air Sampling Technicians on site, as well as the name of the company each individual is representing; (d) the types of air monitoring (i.e., exposure monitoring or area monitoring) being conducted, and the number of samples being collected for each type of air monitoring activity; (e) the results of decontamination enclosure system, critical barrier, isolation barrier, and negative air pressure equipment inspections; (f) a summary of corrective actions and repairs; (g) work stoppages and the reasons for the work stoppage; (h) manometer readings (at least twice per work shift); (i) emergency and fire exit checks; (j) verification that functional fire extinguishers are present in the Restricted Areas; (k) any unusual events that occurred during the work; (l) non-compliance issues observed (i.e., observations that conflict with the requirements of the Contractor's Asbestos Work Plan, this Section, NYCDEP EHS Policies and Procedures, or federal, state, and local regulations) along with the corrective actions that were taken to achieve compliance.
5. Contractor Project Record: The Asbestos Handler Supervisor shall maintain a project record in the regulated work area. The Contractor Project Record shall be made available to the Design Professional of Record or NYCDEP for review at any time during the Asbestos Project, and shall be submitted to the NYCDEP within 24 hours after the completion of the Asbestos Project.
 - a. At a minimum, the Contractor Project Record shall contain the following information: (a) copies of NYCDEP and NYSDOL asbestos certificates/licenses for all individuals/companies working on the Asbestos Project; (b) copies of all notifications, amendments, permits, work safety plans, and variances related to the Asbestos Project; (c) copies of all exposure and ambient air monitoring results generated during the Asbestos Project; (d) documentation of all pressure differential readings for Regulated Abatement Work Areas; (e) copies of all available bulk sample analytical data as well as asbestos survey reports relating to the Asbestos Project; (f) copies of all daily sign-in sheets as defined in Article 1.5; (g) a list of emergency phone numbers, including the local fire department, local

police department, nearest hospital, as well as phone numbers for the Design Professional of Record and NYCDEP personnel responsible for administering the Asbestos Project; (h) a copy of New York City's Asbestos Control Program Rules and Regulations (Title 15, Chapter 1); (i) a copy of New York State's Asbestos Rules and Regulations (12 NYCRR 56); (j) a copy of EPA's asbestos regulations (40 CFR 61, Subparts A and M); (k) copies of all MSDSs pertaining to all chemicals being used during the Asbestos Project; (l) a copy of this Section; (m) a copy of the Contractor's Asbestos Work Plan; (n) copies of all daily air monitoring reports as defined in Article 1.5; (o) copies of all daily asbestos project inspection reports as defined in Article 1.06; (p) copies of all weekly waste storage area inspection reports as defined in Article 1.5; (q) copies of all NYCDEP EHS Policies and Procedures identified in Article 1.3 of this Section.

6. Daily Sign-In Documentation: The Contractor shall generate daily sign-in documentation for all individuals entering and exiting each Regulated Abatement Work Area and Restricted Area, for the duration of the Asbestos Project. The daily sign-in documentation shall be maintained in the Asbestos Abatement Contractor's bound Log. The daily sign-in documentation shall be made available to the Design Professional of Record or NYCDEP for review at any time during the Asbestos Project.
 - a. At a minimum, daily sign-in documentation shall include: (a) the individual's full name (printed); (b) the individual's signature; (c) the name of the company the individual is representing; (d) the times of entry and exit from the work areas; (e) verification by the Asbestos Handler Supervisor that the individual possesses current NYCDEP and NYSDOL asbestos certifications if the individual intends to enter a Regulated Abatement Work Area.

1.6 QUALITY ASSURANCE

- A. Permits and Notifications: The Contractor shall make all necessary notifications, secure any necessary permits and variances, complete agency-required forms, and pay all fees in conjunction with asbestos abatement activities, waste transportation, and waste disposal in accordance with federal, state, and local asbestos regulations. Prior to the submittal of any notifications, permit/variance applications, or forms to regulatory agencies, the Contractor shall provide them to the Design Professional of Record for review.
- B. Scheduling: The Contractor shall coordinate and schedule all phases of the work to be performed under this Section with the NYCDEP, subcontractors, material suppliers, and other parties as necessary to ensure the proper execution of the work.
- C. Compliance: In addition to the detailed requirements of this Section and NYCDEP EHS Policies and Procedures, the Contractor shall comply with all applicable regulations of federal, state, and local authorities pertaining to the abatement, disturbance, cleanup, handling, transportation, storage, and disposal of ACM, trace asbestos materials, and asbestos-containing waste materials. All matters regarding the interpretation of any regulations, standards, or policies shall be submitted to the Design Professional of Record for resolution before starting the work. Where the requirements of this Section, NYCDEP EHS Policies and Procedures, and federal, state, or local regulations conflict or vary, the most stringent requirements or regulations shall apply.

- D. **Rejection of Non-Complying Items:** The NYCDEP reserves the right to reject items incorporated into the work which fail to meet the specified minimum requirements. The NYCDEP also reserves the right to reject Contractor submittal items that are deemed inappropriate or unacceptable by the NYCDEP. Submittal items that may be deemed inappropriate or unacceptable include proposed vendors or subcontractors with regulatory citations/violations. The NYCDEP further reserves the right, and without prejudice to other recourse, to accept non-complying items subject to an adjustment in the Contract amount, as approved by the NYCDEP.
- E. **Qualifications:**
1. **Asbestos Abatement Contractor:** The Contractor shall possess a current NYSDOL asbestos license, and shall have successfully completed at least two (2) Asbestos Projects of comparable scope and methodologies to the work being performed under this Section within the past three (3) years. This experience shall be documented by identifying the following: (a) the name, address, and phone number of each facility where the work was performed; (b) the name of the individual representing the owner at each facility; (c) the types of facilities where the work was performed; (d) the volume and type of each material that was abated; (e) the specific methods of abatement used at each facility (including the tools, technologies, and engineering controls employed).
 2. **Asbestos Handler Supervisor:** The Contractor shall have on staff and assigned to this Contract an Asbestos Handler Supervisor. The Asbestos Handler Supervisor shall be currently certified by the NYCDEP (if working on Asbestos Projects in the five boroughs) and NYSDOL (for all Asbestos Projects). In addition, the Asbestos Handler Supervisor shall have a minimum of two (2) years' experience on Asbestos Projects, and shall have served as the Asbestos Handler Supervisor on at least three (3) Asbestos Projects of comparable scope and methodologies to the work being performed under this Section.
 3. **Asbestos Handler:** The Contractor shall have on staff and assigned to this Contract a sufficient number of experienced and properly trained Asbestos Handlers. Asbestos Handlers shall be currently certified by the NYCDEP (if working on Asbestos Projects in the five boroughs) and NYSDOL (for all Asbestos Projects), and shall have a minimum of one (1) year of experience on Asbestos Projects, and shall have worked on at least three (3) Asbestos Projects of comparable scope and methodologies to the work being performed under this Section.

1.7 SPECIAL REQUIREMENTS

- A. **Commencement of Work:** Ten (10) business days prior to the proposed start of work at each separate location, the Contractor shall notify the Design Professional of Record, the onsite safety staff, and building occupants. No work may proceed at any location until authorized by the Design Professional of Record.
- B. The Contractor shall coordinate any required equipment shutdowns with Site Operations personnel prior to starting the Work.

- C. Access Restrictions: The Contractor shall inform the Design Professional of Record and Site Operations personnel of proposed access restrictions (i.e., areas or items of equipment which will not be accessible during the proposed Asbestos Project), and give them estimated time frames (including specific dates) of such proposed access restrictions. The Contractor shall be aware that other contractors may be at any of the work sites associated with this Contract. As a result, the Contractor shall not have exclusive rights to any work site, and shall fully cooperate and coordinate this work with the work of other contractors who may be on site. Therefore, the Contractor shall notify other contractors in advance of the abatement work included herein, to provide them with sufficient time for coordination of interrelated items that are included in their contracts and that must be performed before, after, or in conjunction with the work included under this Section. The Contractor shall ensure that Personal Decontamination Enclosure Systems and Waste Decontamination Enclosure Systems are constructed of solid materials with lockable doors to prevent unauthorized entry during non-working hours.
- D. Meetings: The Contractor shall visit and investigate the site and review the Contract Drawings, this Section, NYCDEP EHS Policies and Procedures, and become familiar with any conditions which may affect the work, as part of the pre-construction meeting and site walk-through. The Contractor shall hold all meetings with appropriate parties as scheduled and as otherwise necessary to accomplish the work of the Contract in accordance with its specific requirements and standards. In addition to the pre-construction meeting and site walk-through, other meetings may be required or may be requested by the Design Professional of Record including briefings with Site Operations personnel. Written documentation (i.e., "minutes") of all meetings shall be generated by the Contractor, and copies shall be provided to the NYCDEP within three (3) business days following each meeting.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Caulking: High-grade rubber base caulk for masonry and/or for other materials.
- B. Encapsulant: Product shall be rated as acceptable for use intended when field tested in accordance with ASTM Standard P-189: "Specification for Encapsulants for Friable Asbestos Containing Building Materials". Use only materials that have a flame spread index of 25 or less when dry, when tested in accordance with ASTM E-84.
- C. Glove-Bag: 0.15 mm thick, 1500 mm x 1500 mm, transparent polyethylene or polyvinylchloride plastic with long sleeve gloves, designated inlets for HEPA vacuum attachment, and storage enclosure.
- D. Impermeable Waste-Disposal Containers: Suitable to receive and retain any asbestos-containing or contaminated material until disposal at an approved site. The containers shall be labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101. Containers must be both water-tight and air-tight.
- E. HEPA Filters: HEPA filters used in vacuuming equipment and negative air pressure equipment (i.e., microtraps) must meet or exceed any manufacturer's specifications and recommendations,

as well as specifications presented in the Standard for Safety High-Efficiency, Particulate, Air Filter Units (UL 586).

- F. Plastic Sheeting: Product Standard PS 17-69 and OSHA Regulation 29 CFR 1926.1101 shall be fire retardant in accordance with NFPA Standard 701; Polyethylene plastic sheeting material 6-mil thickness for covering floors and walls, providing air locks, and sealing doors and windows; supply in appropriate widths to minimize seams. Wood or other materials used in the construction of temporary enclosures shall be non-combustible or fire-retardant in accordance with NFPA 255, ASTM D-2898, ASTM E84, and UL 723. Reinforced sheeting is required for applications subject to wear and tear.
- G. Surfactant (Wetting Agent): 50% polyoxyethylene ester and 50% polyoxyethylene ether, or approved equal, shall be mixed with water to provide a concentration of 2 ml surfactant to 1 liters of water, or manufacturer's recommended concentration.
- H. Tape: Glass fiber or other tape capable of sealing joints of adjacent sheets of plastic sheeting and for attachment of plastic sheets to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions, including use of amended water. Minimum tape width shall be 50 mm.
- I. Warning Labels and Signs: As required by OSHA regulations 29 CFR 1910.1001 and 1926.58.
- J. Waste Water Filters: Discharged liquids shall pass through a primary filter and the output shall be particles 20 microns or smaller. The secondary filter shall have output particles 5 microns or smaller.

2.2 EQUIPMENT

- A. Respirators: The Contractor shall select respirators approved by the National Institute for Occupational Safety and Health (NIOSH) for use in Regulated Abatement Work Areas where the abatement or disturbance of ACM or asbestos-containing waste materials will occur. At a minimum, the Contractor shall provide each individual within a Regulated Abatement Work Area with a half-face, negative pressure, air purifying respirator equipped with HEPA filter cartridges. The Contractor's Asbestos Handler Supervisor shall make all determinations regarding respiratory protection modifications that will be implemented for the work. All modifications shall be in accordance with the OSHA Asbestos Standard for the Construction Industry (29 CFR 1926.1101) and the Contractor's Asbestos Work Plan. At no time during the Asbestos Project shall respiratory protection within a Regulated Abatement Work Area be downgraded to below the minimum requirement of a half-face, negative pressure, air purifying respirator equipped with HEPA filter cartridges.
 - 1. Provide workers with personally issued and marked respirator equipment suitable for the asbestos exposure level in the abatement work area.
 - 2. Authorized visitors must provide their own respirators, with fresh filters or cartridges as necessary, to enter the abatement work area.
- B. Air Filtration Units: Shall be factory-sealed and equipped with HEPA filters, pre-filters, instrumentation to monitor pressure differential, and safety and warning devices.

1. Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL).
 2. Access to the units for replacement of all air filters shall be from intake end. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps. The filter media shall be completely sealed on all edges with a structurally rigid frame with a continuous rubber gasket.
 3. HEPA Filters: Provide units equipped with HEPA filters. Filters shall be individually tested and certified by the manufacturer.
 4. Pre-filters: Provide a two-stage pre-filtration to extend the life of the primary HEPA filter. The first-stage pre-filter is a low-efficiency type effective for particles 100 micrometers and larger. The second-stage (or intermediate) filter has a medium efficiency effective for particles down to 5 micrometers.
 5. Instrumentation: Provide units equipped with a magnehelic gauge or manometer to measure the pressure drop across filters and to indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure readings on the magnehelic gauge affixed near the gauge for reference, or the magnehelic reading indicating at what point the filters should be changed, noting cubic feet per minute (CFM) air delivery at that point. Provide an elapsed time meter to show the total accumulated hours of operation.
 6. Safety and Warning Devices: Provide units with the following safety and warning devices:
 - a. Warning lights to indicate normal operation, too high a pressure drop across the filters (i.e., filter overloading), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge).
 - b. GFCIs.
 - c. Audible alarm if unit shuts down due to operation of safety systems.
 - d. Electrical overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.
- C. Personal Protective Equipment (PPE): Provide workers and visitors with sufficient sets of protective full body clothing, to include full body coveralls with hood, boots (for workers) and footwear coverings (for workers and visitors), and gloves. Provide eye protection and hard hats as required by applicable safety regulations. Contaminated non-disposal clothing and footwear shall be left in the equipment room until the end of the asbestos abatement work, at which time such items shall be disposed of as asbestos waste, or shall be thoroughly cleaned of all asbestos or asbestos-containing material. Provide storage facilities for visitors and workers for removed street clothing in the clean room.

1. Hard Hats: Provide hard hats that meet ANSI Z89.1 for use where work is overhead, scaffolding is being used, or as otherwise required by OSHA. Label hats with same warning labels as required for ACM disposal bags.
2. Goggles: Provide goggles that meet ANSI Z87.1 as required by OSHA.
3. Gloves: Provide disposable work gloves for use in the abatement work area.
4. Coveralls with Hood: Provide disposable coveralls with hoods for use in the abatement work area.

PART 3 - EXECUTION

3.1 SAFE WORK PRACTICES FOR TRACE ASBESTOS MATERIALS

- A. During the disturbance, cleanup, and disposal of trace asbestos materials (i.e., building materials containing less than or equal to 1% of asbestos), the Contractor shall adhere to the following standards:
1. An exposure assessment shall be performed in accordance with 29 CFR 1926.1101(f) (2) (i) to determine if workers disturbing, handling, or performing cleanup activities involving trace asbestos materials, must wear PPE or respiratory protection.
 2. Wetting agents or special work methods shall be utilized to control potential employee exposures to asbestos during the handling, mixing, removing, cutting, application, or cleanup, of trace asbestos materials, except if the use of these wetting agents/work methods is not feasible (e.g., using them may create electrical hazards or equipment malfunctions).
 3. Asbestos-contaminated wastes and debris shall be cleaned-up promptly and disposed of in leak-tight containers. The handling, disposal, and transport of trace asbestos-containing material wastes is not regulated since the wastes are not ACM (i.e., they do not contain greater than 1% asbestos).
 4. The use of high-speed abrasive saws that are not equipped with “point-of-cut” ventilators or enclosures with HEPA-filtered exhaust air shall be prohibited.
 5. The use of compressed air to cleanup or remove trace asbestos materials is prohibited.

3.2 PREPARATION

- A. Utilities: The temporary use of any on-site utilities shall be subject to the approval of the NYCDEP. The Contractor shall furnish all water and hoses needed for the Asbestos Project, as well as any temporary hookups. Also, the Contractor shall supply all necessary heating equipment and water filtration devices needed for the work. In addition, all temporary lighting and temporary electrical service to a Regulated Abatement Work Area or a Restricted Area shall

be provided by the Contractor, and shall be in weather-proof enclosures and be ground fault protected.

- B. Scaffolding: The Contractor shall furnish all scaffolding of whatever type is necessary to perform the work of this Section, subject to the OSHA Safety Requirements for Scaffolding (29 CFR 1910.28), the City of New York, and the approval of the NYCDEP. Scaffolding shall be inspected after its construction and prior to use by any Contractor employees, by an individual qualified as a Competent Person to inspect scaffoldings, as defined by OSHA.
- C. Signs: The Contractor shall post conspicuous warning signs at all approaches to Regulated Abatement Work Areas, Restricted Areas, and waste storage areas. The signs shall be located at such a distance so that personnel may read the sign and take necessary precautions before entering a Regulated Abatement Work Area, Restricted Area, or waste storage area. Signs shall comply with the requirements of federal, state, and local regulations. Once clearance air monitoring results indicate that a Regulated Abatement Work Area is in compliance with the provisions for re-occupancy set forth in RCNY Title 15, Chapter 1 or 12 NYCRR 56, the signs shall be removed.
- D. **At a minimum**, each sign shall bear the following information in English and the predominant language that is spoken by the Contractor's employees if English is not spoken:
 - DANGER
 - ASBESTOS CANCER AND LUNG DISEASE HAZARD
 - AUTHORIZED PERSONNEL ONLY
- E. RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA
 - NO SMOKING
- F. Fire Extinguishers: The Contractor shall maintain at least two functional fire extinguishers in each Restricted Area. The fire extinguishers shall have a minimum rating of 2-A:10-B:C, and each fire extinguisher shall be checked daily by the Asbestos Handler Supervisor to ensure that it remains functional throughout the duration of the Asbestos Project.

3.3 AIR MONITORING

- A. Exposure Monitoring: Air monitoring for airborne concentrations of asbestos fibers shall be conducted by the Asbestos Handler Supervisor (or by a qualified air monitoring firm) in accordance with OSHA.
 - 1. The Contractor shall collect personal air samples from employees who are anticipated to have the greatest risk of exposure, as determined by the Contractor. Exposure monitoring shall be conducted during each phase of the Asbestos Project (e.g., pre-abatement, abatement, and cleanup) for one work shift from at least one (1) employee that is representative of each type of work task that is being performed. Each personal air sample will "run" for the employee's entire work shift in order to ensure that enough volume (of air) is collected and an accurate 8-hour TWA can be calculated.

Documentation regarding the sample numbers, specific shift when the sampling was conducted, the work tasks that were sampled, the dates of sampling, the employee hours that were worked during the shift, and the total sampling times, shall accompany each laboratory COC form.

2. Complete documentation of all exposure monitoring activities shall be in accordance with Article 1.5.
 3. The Contractor shall submit all exposure monitoring results (along with documentation regarding the type of respiratory protection that was worn during the exposure monitoring) to the NYCDEP within 24 hours from when the air samples were collected.
 4. If at any time, PCM analysis of any air sample (i.e., from exposure monitoring performed by the Contractor) in any phase of the Asbestos Project (i.e., pre-abatement, abatement, cleanup, or clearance) indicates that the filter was “overloaded” and a fiber count cannot be obtained, the sample shall immediately undergo TEM analysis. All costs of the additional TEM analysis will be at the Contractor’s expense.
- B. Area Monitoring: Air monitoring for airborne concentrations of asbestos fibers shall be conducted by the Independent Third Party Monitor under the NYCDEP Construction Management contracts NYCDEP Requirements Contracts or other NYCDEP contracts. The Contractor shall assume that area monitoring will be conducted on all Asbestos Projects (regardless of the project type, the project size, or any conflicting applicable variance) unless the NYCDEP makes a determination that area monitoring for a specific project is not necessary.
1. All clearance air monitoring results shall meet or be below background ambient air levels or 0.01 f/cc (fibers per cubic centimeter) of air (whichever is greater), prior to the breakdown of the containment. If clearance air monitoring results indicate a fiber count greater than background ambient air levels or 0.01 f/cc of air in any area, the Contractor will be required to re-clean that area. For projects conducted outside of the five boroughs, the clearance and action criteria is less than 0.01 f/cc; of air, or background levels (whichever is greater). Repeated cycles of cleaning and clearance air monitoring will be performed until a fiber count is achieved that meets or is below background ambient air levels or 0.01 f/cc of air within the area. All costs of re-cleaning and additional clearance air monitoring will be at the Contractor's expense.

3.4 BULK REMOVAL

- A. Protection of Existing Work to Remain: All work involving the abatement or disturbance of ACM or asbestos-containing waste materials, must be conducted without damage to, or contamination of equipment or surfaces within the Regulated Abatement Work Areas, Restricted Areas, or other areas adjacent to these areas. All such damage or contamination shall be immediately corrected and cleaned up by the Contractor at the Contractor's expense.
- B. Containments and Negative Air Pressure Equipment: Pressure differential readings for each workday shall be obtained and reviewed by the Asbestos Handler Supervisor on a daily basis. All readings shall be documented and kept in the Contractor’s Project Record, as defined in Article 1.5 of this Section. The Asbestos Handler Supervisor shall notify the Design Professional of Record and the NYCDEP immediately, if any variations in the pressure

differential readings may have led to the migration of asbestos fibers outside of a Regulated Abatement Work Area. Corrective actions shall be implemented immediately to ensure that negative pressure is restored.

- C. Personal Decontamination Enclosure System: The Contractor shall ensure that employees do not leave a Regulated Abatement Work Area wearing any potentially contaminated protective work clothing or PPE. Employees are required to shower prior to leaving the Regulated Abatement Work Area.

3.5 CLEANUP AND DISPOSAL

- A. Cleanup: All cleaning work shall progress from the point most remote from the intakes of the negative air pressure equipment, towards the intakes of the equipment, as well as from the highest point of the surfaces to be cleaned towards the lowest point of the surfaces. The Contractor shall maintain all surfaces, including protective tarps, polyethylene sheeting, and coverings within each Regulated Abatement Work Area and each Restricted Area, free of accumulations of dusts, wastes, and debris.
 - 1. The Contractor shall perform housekeeping activities daily throughout each work shift and at the end of each work shift, in order to prevent any accumulation of dusts, wastes, and debris in these areas. Dry sweeping and using compressed air to cleanup a Regulated Abatement Work Area or a Restricted Area is strictly prohibited. HEPA-filtered vacuums and wet cleaning methods shall be used to ensure that these areas remain free of visible dust and debris. In addition, only cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the materials or as approved by the NYCDEP, shall be used.
- B. Collection, Containerization, and Filtration of Wastes: The Contractor shall collect and containerize asbestos waste (solid and liquid), debris, PPE, and containment materials on a daily basis in accordance with the Asbestos Work Plan. Using chutes to move construction debris or waste (bagged or not bagged) will not be permitted at any time.
 - 1. Prior to containerizing asbestos-containing waste materials, the wastes shall be “adequately wetted,” in accordance with Article 1.4 of this Section, and wrapped in 6-mil (0.006”) polyethylene sheeting, or double-bagged in 6-mil polyethylene bags. The bags shall be “goose necked” and sealed air tight with duct tape, and each bag (or wrapped item) shall be labeled in accordance with Article 3.5 of this Section before being placed in an appropriate container (i.e., dumpster, trailer, or roll-off) for disposal.
 - 2. Corrugated cartons or drums may be used in conjunction with polyethylene bags and sheeting for the disposal of asbestos-containing waste materials that have sharp-edged components (e.g., nails, screws, or tin sheeting) which may tear the bags or sheeting. The waste within these drums or cartons must be wrapped or double-bagged in accordance with Article 3.5 of this Section. In addition, the cartons/drums must be labeled in accordance with Article 3.5 of this Section.
 - 3. Wastewater derived from the Asbestos Project shall be collected and filtered through a system with at least a 5.0 micron particle size collection capability. A system containing a series of several filters with progressively smaller pore sizes shall be used to avoid the

rapid clogging of the filtration system by large particles. Contaminated filters shall be disposed of as asbestos waste. Filtered wastewater shall be discharged in accordance with all applicable federal, state, and local regulations.

- a. Discharging filtered asbestos decontamination water to a NYCDEP Water Pollution Control Plant (WPCP) will require written permission from the NYCDEP Bureau of Wastewater Treatment (BWT) and the submission of analytical testing results for asbestos to the BWT for review and approval prior to discharge. This procedure only applies to Asbestos Projects being conducted at a NYCDEP WPCP. The disposal requirements for filtered asbestos decontamination water generated on other NYCDEP properties (e.g., drinking water shafts) may be more stringent or prohibited.
4. The Contractor shall store all bagged asbestos-containing waste materials in DOT-approved container systems (e.g., a roll-off or trailer). No container shall be filled in excess of the capacity marked on the container, and all containers shall be lined with 6-mil (0.006") polyethylene sheeting, have a hard top, and shall be locking in addition to meeting any other federal, state, and local asbestos waste storage requirements. In addition, all containers shall have an intact and legible label affixed to it in accordance with Article 3.5 of this Section. No bagged asbestos waste shall be stored in a Regulated Abatement Work Area or decontamination enclosure system for longer than the current work shift that generated the waste.
5. Non-Asbestos Waste: The Contractor shall store non-asbestos-containing waste materials separately from asbestos-containing waste materials, shall provide all non-asbestos waste containers, and shall make all transportation and disposal arrangements for non-asbestos-containing waste materials in accordance with federal, state, and local regulations.
- C. Labeling: The Contractor shall affix warning labels to all asbestos waste disposal bags, wrapped items, and containers (i.e., drums, dumpsters, trailers, or roll-offs). Labels shall comply with the requirements of federal, state, and local regulations. **At a minimum**, each label on disposal containers/bags/items shall bear the following information in English:
 - DANGER
 - CONTAINS ASBESTOS FIBERS
 - AVOID CREATING DUST
 - CANCER AND LUNG DISEASE HAZARD
- D. [Generator Name, Address, and Telephone Number]
- E. Final Visual Inspection and Clearance Air Monitoring: The Independent Third Party Monitor shall not conduct clearance air monitoring until the Regulated Abatement Work Area has been inspected by the Asbestos Handler Supervisor and the Project Monitor has performed the Final Visual Inspection. During this inspection, the Asbestos Handler Supervisor and the Project Monitor shall determine if the following has been achieved: (a) all ACM and asbestos-containing waste materials have been abated and removed from the area; (b) the area is clean

and dry; (c) Critical Barriers and Isolation Barriers are intact; (d) negative air pressure equipment is turned on and functioning. If any of these items have not been achieved, the Contractor shall perform the necessary corrective actions to achieve compliance before conducting the Clearance Air Monitoring.

- F. Breakdown of the Regulated Abatement Work Area: Critical Barriers shall not be removed and negative air pressure equipment shall not be turned off until clearance air monitoring results meet the criteria specified in this Section and RCNY Title 15, Chapter 1 or 12 NYCRR 56.
- G. Asbestos Project Completion (Form ACP-21)/ Asbestos Project Conditional Completion (Form ACP-20): Upon successful completion of an Asbestos Project performed in the five boroughs, a copy of the ACP-21 or ACP-20 issued by the NYCDEP shall be submitted to the Design Professional of Record.
- H. Disposal of Wastes: The Contractor shall notify the NYCDEP at least five business days prior to the removal of any waste containers, so that the NYCDEP can inspect the containers and the waste manifests. Asbestos-containing waste materials shall be disposed of to ensure that containers do not remain on the job site for longer than necessary. Containers that have reached their storage capacity shall not remain on site and transportation arrangements shall be made for their removal.
- I. Disposal Documentation: The Contractor shall submit written evidence that the landfill receiving asbestos-containing waste materials is approved by federal, state, and local regulatory agencies to receive the wastes. If regulated PCBs (as defined in Detailed Specification 13284 - PCB Management) were detected in the wastes, the contractor will also ensure that the landfill is approved by federal, state, and local regulatory agencies to receive PCB-regulated wastes. The Contractor shall submit one (1) copy of the completed manifest that has been signed and dated by the initial transporter and landfill in accordance with 6 NYCRR 372 and 40 CFR 262, to the NYCDEP. All manifests and Land Disposal Restrictions (LDRs) must be signed by a NYCDEP employee per Detailed Specification 01355 - Hazardous Materials Control.

END OF SECTION 028200