READ THIS FIRST

This Project Spec Document may need additional modifications to suit your project. It is recommended that you proofread each section, paying attention to any “Notes” boxes such as this one--you should remove these “Notes” sections as you go. Also, do a search for all bracket characters “ [ ] “ as they are used to show you areas containing options or project specific details (you can use Microsoft Word’s Find feature {Ctrl-F} to jump to an open bracket “ [ “ character quickly). Again, these bracket characters should be removed.

It is important that every paragraph be numbered to allow for easy referencing. If you use the document’s built in styles and formatting your outline should be fine (turn on the formatting toolbar by going to View > Toolbars > Formatting). Most paragraphs will use the style “Numbered Material” and can be promoted (Shift) or demoted (Shift-Tab).

You should not have to manually enter extra spaces, carriage returns or outline characters such as A, B, C, or 1.01, 1.02; the formatting will do this for you. The entire document is 11 pt. Arial. If you paste items in, you may need to reapply the “Numbered Material” format.

NOTE: This section must be reviewed by the Port Construction Services Regulated Materials Group. Contact: Brian Nichols / (206) 787-7903 / [Nichols.B@portseattle.org](mailto:Nichols.B@portseattle.org)

1. GENERAL
   1. SUMMARY OF WORK
      1. The Contractor shall supply all labor, materials, services, insurance, special permits and equipment necessary to remove and dispose of asbestos containing materials (ACM) in accordance with all applicable federal, state and local regulations and the Contract Documents, including the Drawings and Specifications.
      2. General Requirements
         1. The Contractor is responsible to notify and provide all necessary communications to the responsible regulatory agencies for all required work.
         2. The Contractor is responsible to take appropriate measures ensuring that the project site will be safeguarded from contamination during the asbestos abatement project period.
         3. Building materials in the project area shall be treated as ACM or asbestos-contaminated unless otherwise noted.
         4. All work is to be performed in accordance with applicable codes, standards, regulations, and accepted industry practices. This includes compliance with regulatory requirements applicable at the time the work is performed and is not limited to requirements at the time of bid. All work, including work practices, is to be craftsman-like and is subject to inspection by the Engineer, the Regulated Materials (RM) Designer, and regulatory agency personnel.
      3. All required permits and notifications shall be kept valid for the duration of the Contract. This includes any permit and/or notification revisions, such as changes of abatement dates, shift times, work locations, Contractor personnel, etc.
      4. The Contractor is responsible for restoring the work area and auxiliary areas utilized during the abatement to conditions equal to or better than original. Damages caused during the performance of abatement activities shall be repaired by the Contractor (including, but not limited to, paint peeled off by barrier tape, nail holes, water damage, broken glass) at no additional cost to the Port of Seattle.
      5. All air and bulk sampling information shall be legibly entered on Port of Seattle forms. Copies of the applicable Port forms are available through the Engineer.
      6. Each employee involved in asbestos abatement activities shall be the bearer of a current Certified Asbestos Worker card issued by the Washington State Department of Labor and Industries (L&I). Cards shall be available for inspection at the jobsite. The Contractor shall also provide, at a minimum, one (1) person certified by L&I as an Asbestos Abatement Supervisor, and this person shall be responsible for overall abatement activities. This person shall be immediately available on site when any project work is done. If abatement work is performed on multiple shifts, each shift shall have a certified Asbestos Abatement Supervisor.
      7. Use of the Site: Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to airport and/or seaport rules and regulations affecting the work while engaged in the Project.
      8. Contractor’s Use of the Existing Building: Maintain the existing building in a safe and weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.
      9. Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free of accumulation of waste, rubbish, and construction debris.
      10. Smoking or open fires will not be permitted within the building enclosure or on the premises.
      11. Port Occupancy
          1. Full Port Occupancy: The Port and Port Tenants will occupy the site and the existing building during the entire period of construction. Cooperate fully with the Engineer during construction operations to minimize conflicts and to facilitate Port usage. Perform the work so as not to interfere with the Port’s operation.
          2. Partial Port Occupancy: The Port reserves the right to place and install equipment as necessary in areas of the building in which all asbestos abatement and project decontamination procedures have been completed, and to occupy such completed areas prior to substantial completion, provided that such occupancy does not substantially interfere with completion of work. Such placing of equipment and partial occupancy shall not constitute acceptance of the work or any part of the work.
      12. Site Conditions: The removal area may contain domestic water and sewer lines, baggage conveyor, electrical and communication conduit with active wiring, cable trays, light fixtures and HVAC equipment. The Contractor shall verify location of all equipment and protect and maintain it as required.
      13. The Contractor shall follow all Port rules and regulations regarding access to and from the work site including, but not limited to badging, AOA training, and escort requirements.
      14. The Contractor is responsible for all air sampling for Washington State Department of Labor & Industries (L&I) Division of Occupational Safety and Health (DOSH) and other local, state and federal compliance. Refer to Article 1.07 of this Section for requirements for Contractor air monitoring.
      15. On-Site Observation
          1. The safety and protection of Contractor employees, subcontractor employees, Port employees, consultants, the facility, and the public is the sole responsibility of the Contractor.
          2. The Engineer or representatives of local, State or Federal agencies may make unannounced visits to the site during the work. The Contractor shall provide two complete sets of clean, protective clothing and respirators with the same protection factor as required in the regulated area available daily for such visitor use. It is the visitor’s responsibility to insure all necessary medical qualification, training, and “fit test” certificates are current prior to using any respirator or protective clothing provided by the Contractor.
          3. If the Engineer or agency visitor determines that practices are in violation of applicable regulations, or are endangering workers, the general public or the facility, they will immediately notify the Contractor orally that operations must cease until corrective action is taken. Such notification from the Engineer will be followed by written confirmation within three (3) workdays.
          4. The Contractor shall immediately stop work after receiving such notification, verbally or written. The work may not be restarted until the Contractor receives written authorization from the Engineer.
      16. All costs resulting from such stop work order and any necessary corrective actions will be borne solely by the Contractor and will not be a basis for an increase in the contract amount or an extension of time
   2. ASBESTOS ABATEMENT DEFINITIONS
      1. Port of Seattle (POS) Asbestos Definitions
         1. Regulated Materials (RM) Project Monitor: The RM Project Monitor is a Port on-site representative directly involved with project oversight, abatement inspections and record keeping. The RM Project Monitor reports directly to the Engineer.
         2. Regulated Materials (RM) Project Designer: The Engineer, representative of Port Construction Services (PCS), or person or firm under contract with the Port of Seattle to develop project designs associated with the removal/abatement of regulated materials. The RM Project Designer reports directly to the Engineer.
      2. Definitions Relevant to Asbestos Abatement
         1. Abatement: Procedures to control fiber release from asbestos-containing materials. Includes removal, encapsulation, enclosure, repair, demolition and renovation activities.
         2. ACGIH: American Conference of Governmental Industrial Hygienists
         3. ACM: Asbestos-containing material
         4. Aerosol: A system consisting of particles, solid or liquid, suspended in air
         5. AIHA: American Industrial Hygiene Association
         6. Air Cell: Insulation normally used on pipes and ductwork that is comprised of a corrugated cardboard that frequently contains asbestos
         7. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways separated by a distance of at least 3 feet
         8. Air Monitoring: The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure most commonly utilized in industry for asbestos follows the WISHA reference method outlined in WAC 296‑62‑07735, Appendix A, and WAC 296‑62‑07737, Appendix B. For clearance air monitoring, aggressive monitoring techniques are used and shall be conducted in accordance with EPA document #560/5‑85‑024 (June 1985). Electron microscopy methods may also be utilized for lower detectability as well as specific fiber identification.
         9. Air Sampling Firm (ASF): A professional firm providing specialized services by trained and certified or qualified personnel in the field of asbestos abatement and project management, contracted with or employed by the Contractor or tenant to supervise and/or conduct inspection, monitoring, and analysis services
         10. Amended Water: Water to which a surfactant has been added in order to accomplish more thorough penetration and saturation of the asbestos-containing material
         11. ANSI: American National Standards Institute
         12. Asbestos: The mineral varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, actinolite and tremolite. For purposes of determining respiratory and worker protection, both the asbestiform and non-asbestiform varieties of the above minerals, and these minerals that have been chemically treated and/or altered, shall be considered as asbestos.
         13. Asbestos-Containing Material (ACM): Any material containing more than one percent (1%) asbestos as defined under NESHAP (40 CFR Part 61) OSHA (29 CFR Part 1926.1101), L&I (WAC 296-62-07703), and Puget Sound Clean Air Agency (Regulation III, Article 4)
         14. Asbestos-Containing Waste Material: Any confirmed or suspect asbestos-containing material, or any material contaminated with an asbestos-containing material, which is to be removed from a work area for disposal.
         15. Asbestos Project: An asbestos project includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.
         16. ASTM: American Society for Testing and Materials
         17. Authorized Visitor: Designated representatives of the Contractor or the Port, and representatives of a regulatory or other agency having jurisdiction over the Project
         18. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches
         19. Bridging Encapsulant: The application of a sealant over the surface of an asbestos-containing material to prevent the release of asbestos fibers
         20. Category I; Non-Friable Asbestos-Containing Material (ACM): Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy
         21. Category II; Non-Friable ACM: Any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the methods specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure
         22. Certified Industrial Hygienist (CIH): An industrial hygienist certified in the Comprehensive Practice or Chemical Aspects of Industrial Hygiene by the American Board of Industrial Hygiene
         23. Class I Asbestos Work: Activities involving the removal of thermal system insulation or surfacing ACM/PACM
         24. 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 mastics.
         25. Class III Asbestos Work: Repair and maintenance operations where “ACM”, including TSI and surfacing ACM and PACM, may be disturbed
         26. Class IV Asbestos Work: Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities
         27. Clean Room: An uncontaminated area or room, which is a part of the worker decontamination enclosure system with provisions for storage of worker’s street clothes and clean protective equipment
         28. Containment: An enclosure system
         29. Contractor: The individual or business with which the Port contracts with to perform the asbestos abatement
         30. Competent Person: The individual onsite (a representative of the Contractor) who is capable of identifying existing asbestos, identifying hazards in the workplace, and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate them as specified in WAC 296-62-07728. The competent person shall meet all requirements specified in WAC 296-62-07728. The competent person shall be certified as an asbestos supervisor in compliance with WAC 296-65-030(3) and 296-65-012.
         31. Curtained Doorway: A device to allow ingress or egress from one room to another, typically constructed by placing three overlapping sheets of plastic over an existing or temporarily framed doorway
         32. Cutting: Penetrating with a sharp-edged instrument; includes sawing, but does not include shearing, slicing, or punching.
         33. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility
         34. Differential Pressure System: A containment system utilizing HEPA machines in an airtight enclosure
         35. Disposal Bag: 6‑mil thick leak-tight plastic bags used for transporting asbestos waste from the work site and to the disposal site. Each shall be labeled in accordance with WAC 296‑62‑07721, 40 CFR 61.150 and PSCAA Regulation III, Article 4.05(b)(10).
         36. DOSH: Washington State Department of Labor and Industries (L&I) Division of Occupational Safety and Health
         37. Encapsulant: A material which is applied to asbestos-containing material to reduce or control the potential 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)
         38. Encapsulation: The application of an encapsulant to asbestos-containing materials in accordance with the manufacturer’s specifications
         39. Enclosure: A semi-air tight system used to segregate and isolate an asbestos abatement area, and which is continuously served by a negative pressure ventilation system once abatement activities start
         40. EPA: U.S. Environmental Protection Agency, Region X
         41. Equipment Room: An area or room, which is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment
         42. Excursion Limit: The maximum personal exposure concentration of asbestos fibers in air for any 30-minute period. Per WAC 296-62-07705, the excursion limit is 1.0 fiber per cubic centimeter (1.0 f/cc).
         43. Facility: Any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential dwellings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building.
         44. Facility Component: Any part of a facility including equipment
         45. Filter: A media component used in respirators or equipment to remove solid or liquid particles from air or water
         46. Fixed Object: A piece of equipment or furniture in the work area, which cannot be removed from the work area
         47. Friable Asbestos Material: Any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 Section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure
         48. Friable Upon Removal: A non-friable material, which becomes friable when disturbed during removal
         49. Fugitive Source: Any source of emissions not controlled by an air pollution control device
         50. Glovebag Technique: A method for removing small amounts of friable asbestos-containing material from fireproof beams, HVAC ducts, short piping run, valves, joints, elbows and other non-planar surfaces in a non-contained work area. The glovebag assembly is a manufactured or fabricated device consisting of a bag (typically constructed of plastic), two inward projecting long sleeve gloves, an internal tool pouch and an attached or pre-printed label. All workers who are permitted to use the glovebag technique must be trained, experienced and skilled in this abatement method.
         51. Grinding: To reduce to powder or small fragments, including mechanical chipping or drilling
         52. HEPA Filter: A high efficiency particulate air filter capable of removing particles greater than 0.3 microns in diameter with 99.97% efficiency using Dop testing methodology
         53. HEPA Vacuum: A vacuum system equipped with HEPA filtration
         54. HEPA Machine: Negative air machine
         55. HVAC: Heating, Ventilation and Air Conditioning System
         56. Installation: Any building or structure or any group of buildings or structures at a single demolition or renovation site that are under the control of the same owner or operator (or owner or operator under common control)
         57. L&I: Washington State Department of Labor and Industries
         58. Leak-Tight: Solids or liquids cannot escape or spill out. It also means dust-tight.
         59. Malfunction: Any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of asbestos are increased. Failures of equipment shall not be considered malfunctions if they are caused in any way by poor maintenance, careless operation, or any other preventable upset conditions, equipment breakdown, or process failure.
         60. Material Decon Unit: A decontamination system, which is utilized for transferring containerized waste from inside to outside of the work area
         61. Movable Object: A piece of equipment or furniture in the work area, which can be removed from the work area
         62. MSDS: Material Safety Data Sheet
         63. Mudded Pipe Insulation Section: A continuous section of pipe insulation less than 12” in length, which may contain one or more plumbing fitting(s) (i.e., elbows, tees, valves, “y’s”, unions, etc.)
         64. Negative Air Machine: A specially designed fan mounted in a cabinet that draws air from the contaminated space into pre-filters and a HEPA filter
         65. Negative Pressure Respirator: A respirator in which the air pressure inside the respirator is negative during inhalation in relation to the air pressure outside the respirator
         66. Negative Pressure Enclosure: The negative pressure/local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure of -0.02 inches of water inside the work area and a minimum of four (4) air exchanges per hour from adjacent areas into the work area and exhausting clean, filtered air outside work area
         67. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from within the containment work area. A sufficient volume or air shall be exhausted to create a minimum pressure of -0.02 inches of water within the enclosure with respect to the area outside of the containment work area.
         68. NESHAP: The National Emission Standard for Hazardous Air Pollutants (40 CFR Part 61)
         69. Non-Friable Asbestos-Containing Material: Any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure
         70. NIOSH: The National Institute for Occupational Safety and Health
         71. OSHA: The Occupational Safety and Health Administration
         72. Outside Air: The air outside building, structure, negative air enclosure or containment
         73. Owner or Operator of a Demolition or Renovation Activity: Any person, who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person, who owns, leases, operates, controls, or supervises the demolition or renovation operation or both
         74. PACM: Presumed asbestos-containing material; includes thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980.
         75. PAT Program: Proficiency Analytical Testing Program to determine quality of laboratory performing PCM analysis, as administered by the AIHA
         76. PCM: Phase Contrast Microscopy
         77. PLM: Polarized Light Microscopy
         78. Particulate Asbestos Material: Finely divided particles of asbestos or material containing asbestos
         79. Penetrating Encapsulant: Liquid material applied to asbestos-containing material to control airborne fiber release by penetrating into the material and binding its components together
         80. PEL: Permissible Exposure Limit. The maximum personal exposure concentration of asbestos fibers in air as an eight-hour time weighted average (TWA). Per WAC 296-62-07705, the PEL is 0.1 fiber per cubic centimeter (0.1 f/cc).
         81. Personal Monitoring: Sampling the asbestos fiber concentrations within the breathing zone of an employee during representative operations as required by applicable regulations
         82. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance outside the respirator to the concentration inside the respirator at the breathing zone of the wearer.
         83. Regulated Area: An area established by the Contractor to demarcate areas where airborne concentrations of asbestos exceed, or can reasonably be expected to exceed the permissible exposure limits. The regulated area may take the form of (a) a temporary enclosure, as required by WAC 296‑62‑07711, or (b) an area demarcated in any manner that minimizes the number of employees exposed to asbestos.
         84. Regulated Asbestos-Containing Material (RACM): (a) Friable asbestos material; (b) Category I Non-friable ACM that has become friable; (c) Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading; or (d) Category II Non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by 40 CFR Part 763, Subpart F
         85. Removal: To take off asbestos containing materials from surfaces or components of a facility
         86. Renovation: Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.
         87. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres
         88. Shower Room: A room between the clean room and the equipment room within the worker decontamination system supplied with hot and cold running water controllable at the tap and suitably arranged for complete showering
         89. Staging Area: Either the holding area or some areas near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area
         90. Structural Member: Any loaded-bearing member of a facility, such as beams and load-bearing walls or any non-load supporting member, such as ceilings and non-load supporting walls
         91. Surfactant: A chemical wetting agent added to water to improve penetration
         92. “Tattle-Tale”: A material or method providing a positive visual method of checking material leakage, such as cardboard or chalk, which becomes noticeably darker when wet
         93. Time Weighted Average (TWA): The average exposure to a contaminant in air measured during a specific time period, usually a shift, adjusted to eight hours
         94. Visible Emissions: An emission containing particulate asbestos material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
         95. Waste Generator: Any owner or operator of a source covered by Department of Transportation regulations whose act or process produces asbestos-containing waste material. All demolition debris materials, including asbestos-containing materials, except those containing substances classified as hazardous or dangerous by controlling local, state or federal regulatory agencies, shall upon their demolition become the property of the Contractor.
         96. Waste Shipment Record: The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material
         97. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste
         98. Work Area: Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions
         99. Worker Decontamination System: A series of connected rooms, consisting of a clean room, a shower room and an equipment room separated from each other and from the work area by curtained doorways. This system is used for all worker entries and exits from the work area.
         100. WSDOT: Washington State Department of Transportation
   3. STANDARDS AND REFERENCES
      1. General Requirements
         1. All work under this contract shall be done in strict accordance with all applicable regulations, standards and codes governing asbestos abatement and in accordance with the “Standards of the Industry”.
         2. The Port will utilize and enforce the recommendations of various references as guides including:
            1. Skoog, Robert F., and Twombly, Jr., Robert C. “The Asbestos Abatement Worker’s Handbook”, and
            2. Levins, Hoag, “The Glove Bag Book and Asbestos Maintenance Safety Guide”.
         3. The most recent edition of any relevant regulation, standard, document or code shall be in effect during the work, regardless of the effective date of this specification’s governing contract. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be utilized. All regulatory revisions and requirements relating to this Contract after the Contract is signed shall, nonetheless, be incorporated at no additional cost to the Port.
      2. Standards: Standards that govern asbestos abatement work or hauling and disposal of asbestos waste materials include the following:
         1. American National Standards Institute (ANSI)
         2. Fundamentals Governing the Design and Operation of the Local Exhaust Systems, ANSI Standard Z 9.2-2012
         3. Practices for Respiratory Protection, ANSI Standards Z88.6-2006, Z88.7-2010 and Z88.10-2010
         4. American Society for Testing and Materials (ASTM)
         5. Specification for Encapsulant for Friable Asbestos Containing Building Materials Proposal P-18
         6. Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849-82
      3. EPA Guidance Documents: Guidance documents that discuss asbestos abatement work or hauling and disposal of asbestos waste materials are listed below for the Contractor’s information only. These documents do not describe the work and are not a part of the work of this contract. EPA maintains an information number (800) 334‑8571.
         1. Asbestos-Containing Materials in Buildings - A Guidance Document. Parts 1&2 (Orange Books) EPA C00090 (out of print)
         2. Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA 560/5-85-024
         3. Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule (40 CFR Part 763)
         4. Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA 560/5-84-005
         5. Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA 560/5-84-006
         6. Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018
         7. Asbestos Waste Management Guidance. EPA 530-SW-85-007
         8. Asbestos Fact Book. EPA Office of Public Affairs
         9. Asbestos in Buildings. Simplified Sampling Scheme for Friable Surfacing Materials
         10. Commercial Laboratories with Polarized Light Microscopy Capabilities for Bulk Asbestos Identification
         11. A Guide to Respiratory Protection for the Asbestos Abatement Industry. EPA-560-OPTS-86-001
   4. CODES AND REGULATIONS
      1. General Applicability of Codes, Regulations and Standards: Except to the extent that more stringent requirements are written directly into the Contract Documents, all applicable codes, regulations and standards have the same force and effect and are incorporated into the Contract Documents by reference as if copied directly into the Contract Documents.
      2. Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable federal state and local regulations pertaining to work practices, hauling, disposal and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of his personnel as required by the applicable federal, state and local regulations. The Contractor shall hold the Port and Port’s Representative harmless for failure to comply with applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees or his subcontractors including without limitation: the costs of compliance, payment of all fines levied against the Port and Port’s representative, and payment of all attorney’s fees and costs incurred in defense of the Port or Port’s representative for alleged regulatory violations.
      3. Federal Requirements: Federal requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials including but not limited to the following:
         1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)
            1. Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite; Final Rules, 29 CFR Part 1910, Section 1001 and 29 CFR Part 1926, Section 58
            2. Respiratory Protection, 29 CFR Part 1910, Section 134
            3. Construction Industry, 29 CFR Part 1926
            4. Access to Employee Exposure and Medical Records, 29 CFR Part 1910, Section 2
            5. Hazard Communication, 29 CFR Part 1910, Section 1200
            6. Specifications for Accident Prevention Signs and Tags, 29 CFR Part 1910, Section 145
         2. U.S. Environmental Protection Agency (EPA)
            1. Asbestos, 40 CFR 763
            2. National Emission Standard for Hazardous Air Pollutants; Asbestos, NESHAP Revision; Final Rule, 40 CFR Part 61
            3. Office of Solid Waste publication Asbestos: Waste Management Guidance (EPA/530-SW-85-007)
         3. U.S. Department of Transportation (DOT)
            1. Hazard Material Regulations (HMR), 49 CFR Parts 171-180
            2. Performance-Oriented Packaging Standards; Changes of Classification, Hazard Communication, Packaging and Handling Requirements Based on UN Standards and Agency Initiative; Final Rule, 49 CFR Part 107
      4. Washington State Requirements: DOSH rules that govern asbestos abatement work or hauling and disposal of asbestos waste material include but are not limited to the following:
         1. General Occupational Health Standards - WAC 296‑62
         2. Asbestos Removal and Encapsulation - WAC 296‑65
         3. Safety Standards for Construction Work - WAC 296‑155
         4. Demolition - WAC 296-155-775 through 830
         5. Respirators - WAC-296-842
         6. WISHA Regional Directives: Occupational Exposure to Asbestos, WRD 23-10; Asbestos Project Notification, WRD 23.25; Asbestos-Containing Joint Compound in Wallboard Systems, WRD 23.34; Demolition of Building with Asbestos-Containing Materials, WRD 23.35
         7. WISHA Interim Interpretative Memos (WIIM): Mechanical Removal of Asbestos-Containing Floor Tile, WIIM #97-7-G
         8. Safety Standards - WAC 296‑24
      5. Local Requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
         1. Puget Sound Clean Air Agency (PSCAA) Regulation III, Article 4 - Asbestos Control Standard
   5. SUBMITTALS
      1. The Contractor shall provide complete submittals in accordance with Section 01 33 00 and as specified below.
      2. Preconstruction Submittals
         1. Asbestos Work Plan: Include a detailed plan of the procedures proposed for use in complying with the specifications. At a minimum, the Work Plan shall include the following:
            1. Methods: Include a description of all techniques, methods, and special equipment to be used during the Contract, including methods for typical abatement work required for the Contract. Examples include: Class I asbestos work (e.g., fireproofing abatement), spot abatement of fireproofing, spot abatement of pipe insulation, tile and mastic removal, pre-cleaning of various surfaces, and ceiling tile (spline, suspended, paraline) cleaning.
            2. Shop Drawings: For asbestos work that requires the use of a negative pressure enclosure, provide shop drawings (using the abatement plans) to show the layout of containment, exhaust route, regulated area barriers, and construction barriers (whether they are installed by the Port, other contractors or the abatement contractor). Show the locations of negative air machines, decontamination areas, loadout areas, and make-up air entry points. Include view window locations.
            3. Handling of Waste: Include specific information relating to handling, transport, and disposal of asbestos-containing waste.
            4. Landfill: Identify the proposed disposal site at which any waste material generated during the project will be disposed and furnish evidence of all necessary government approvals to dispose of the waste.
            5. Laboratory Qualification Information: Submit the name, address, phone number, and web address of proposed Independent Testing Laboratories.

The Laboratory shall prove proficiency in the AIHA/NIOSH PAT Program. The submitted copy of the Quality Control Program shall minimally meet or exceed WISHA standards. Failure to comply with these standards will require lab work to be subcontracted to another laboratory at no additional cost to the Port of Seattle.

* + - * 1. Air Monitoring Program

The Air Monitoring Program shall include the proposed sampling plan, sampling procedures, and field quality control procedures of the firm conducting the air monitoring.

* + - * 1. Worker Certification: Submit current copies of Asbestos Supervisor and Worker Certifications for employees scheduled to work on the project in compliance with WAC 296-65-010.
        2. Contractor Certification: Submit proof of current certification of Contractor by Washington Department of Labor & Industries as a certified asbestos abatement firm.
        3. Asbestos Supervisor/Competent Person: Submit the name, current Asbestos Supervisor Certification, and resume of experience of the assigned on-site Supervisor. At a minimum, the supervisor shall have successfully completed a Supervisor Training Course in accordance with WAC 296-65-007. References and work on similar projects will also be reviewed. The Port reserves the right to reject the Supervisor from the project. Should this be the case, the Contractor shall then submit another on-site Supervisor for approval as described above.
        4. Respirator Fit Test Records: Submit a copy of current quantitative respirator fit testing records for personnel performing asbestos work.
        5. Notifications: Submit a copy of all required notifications and permits obtained by the Contractor to perform asbestos work, including the Washington State Department of Labor & Industries and Puget Sound Clean Air Agency.
    1. Construction Phase Submittals
       1. Daily Work Records: Submit the following information to the Engineer daily. This information shall be submitted prior to the start of work on the next scheduled work shift.
          1. Air and bulk sample data sheets and laboratory analytical results, including chain of custody
          2. Certified Asbestos Supervisor daily inspection report, including scope of work completed, engineering controls used, hours worked, and equipment and materials used. The daily report shall be verified and signed by the Project Monitor.
    2. Post-Construction Closeout Submittals
       1. Project Overview: Provide a basic project summary identifying the scope and summarizing the work performed by the Contractor. Provide enough information to have a basic understanding of the project and include project and contact names and ID numbers; Contractor’s company name; where, when, and what type of work was completed; and a discussion of significant problems encountered during the course of the work. The written summary shall include a description of all changes or modifications to the Contractor’s Pre-Construction Work Plan.
       2. Certification: Provide written certification from the Contractor’s Project Manager or Supervisor that the Contractor has fully inspected the work area and completed work in strict accordance with the Specifications.
       3. Air Monitoring: Submit documentation of all Contractor air monitoring results relative to regulatory compliance. Include copies of all air monitoring data sheets, chain-of-custody documentation and analytical reports for sampling conducted at the site.
       4. Project Record Documents: Provide project records including documentation of all contract changes, and copies of work site entry log books, safety logs, sign-in sheets, and supervisor daily field reports. Provide copies of project meetings for pre-abatement, construction period, and project closeout meetings.
       5. Disposal Manifests: Submit copies of all asbestos waste disposal transportation and disposal manifests including signed receipts from the landfill, and chain-of-custody forms.
       6. Submit copies of amendments or modifications to pre-construction Notices and Permits that were filed with regulatory agencies during the course of the project.
       7. Submit copies of inspections or visits by regulatory agencies. Include copies of any citations or notices received by the Contractor from regulatory agencies during the course of the project.
  1. CONTRACTOR AND PORT RESPONSIBILITIES
     1. The Contractor shall coordinate with the Port to accomplish the following tasks, prior to Commencement of Work.
        1. The Contractor shall place and maintain an information board at the project site for the duration of the Project. The information board shall be a minimum of 2’x 4’ in dimensions and placed in a conspicuous location where Contractor employees, the Port and Port Representative(s), and authorized visitors may view project information. Typical locations include staging area, entrance to clean room of decontamination unit, job trailer, or similar location. On multiple work areas, information shall be kept at a central meeting place.
        2. The following information shall be placed on the information board:
           1. A telephone contact list containing the names, addresses, telephone numbers, including cell phone, numbers of Port emergency, Contractors, Contractor’s air sampling firm, the Manager, Project Monitor, supervisors, and any other persons who may assist and other personnel involved in the project. These contacts must include persons with decision-making authority and provide for 24 hour 7 days per week availability.
           2. Notifications to appropriate Federal, State and local regulatory agencies including building permit if applicable
           3. Air monitoring results
           4. Current prevailing wages rates
           5. Current project schedule
           6. Washington State Industrial Insurance and Workman’s Compensation information
           7. Hazard communication information
           8. Asbestos Abatement Contractor’s License
           9. Current work plan/working drawing form
           10. Other information the Contractor wishes to convey to personnel, which may be affected by the work or which is required by governing regulations
     2. The Contractor will notify the Engineer in writing (utilizing the daily work log) of work area, start and stop time of work, outline of work, and areas the will be effected by the work. The Port will notify occupants of work areas that may be disrupted by abatement work.
     3. The Contractor, with assistance from the Engineer, will complete the Utility Shutdown Request Form in accordance with Section 01 31 13. The Contractor shall inform the Engineer at least 72 hours prior to commencement of work. Include requests for shut down or isolation of diffusers supplying air to the area.
     4. Coordinate with the Engineer to close fire dampers in project area if approved by Port Fire Department.
     5. Provide to the Engineer information concerning access, shut down and protection requirements of certain equipment and systems in the work area. The Engineer shall coordinate with Port Maintenance and other Port Departments to include other equipment and systems as needed, including Port-owned equipment.
     6. Identify and coordinate activities with the Engineer and the Electrical Contractor to provide the following services:
        1. Lock-out/tag-out for electrical circuits within the abatement boundary.
        2. Hook-up and, if required, Washington State Department of Labor and Industries electrical permits for the provision of temporary power requirements to the Contractor. The Contractor needs to identify temporary power and water needs with in the work area to allow the Engineer and the Electrical Contractor to provide the requirements in a timely manner.
  2. AIR MONITORING
     1. The following describes air monitoring to verify that the building beyond the work area and the outside environment remain uncontaminated. This section also sets forth airborne fiber levels both inside and outside the work area as action levels and describes the action required by the Contractor if an action level is met or exceeded.
     2. The RM Project Monitor may monitor inside and outside the work area, as well as collect personal samples used for quality control. Note: The purpose of the RM Project Monitor’s air monitoring and inspection activities is to provide quality assurance only, not to replace any air monitoring and/or inspections required of the Contractor by Federal, State, or local regulations or by this Section. The Contractor shall perform the monitoring required by DOSH asbestos regulations for inside and outside areas of the abatement work.
     3. In addition to the air monitoring requirements described elsewhere in this Section, the Contractor is responsible for all air monitoring as required by the Washington State Department of Labor and Industries, including pre-abatement samples, personal time-weighted average and short-term excursion limit samples, negative pressure enclosure samples at the entrance to the decontamination chamber and the discharge from the HEPA exhaust, post- abatement clearance sampling, and “other” sampling as required by Federal, State, or local regulations. In addition, the Contractor is responsible for post-abatement final inspection to determine that all required asbestos has been removed and that the area is sufficiently clean for post-abatement clearance sampling. The Port and the RM Project Monitor shall be held harmless from any legal action taken as a result of such sampling. The Contractor shall also indemnify, hold harmless, and defend the Port, its agents, and employees for the use of any Port supplied air-monitoring data.
     4. The Contractor is required, at its own expense, to take its own employee air samples per the following regulations:
        1. WAC 296-62-07709 - (Exposure Monitoring)
        2. WAC 296-62-07735 - (Appendix A)
     5. The air samples must be analyzed by a laboratory in accordance with the following:
        1. Personnel conducting on site asbestos air sample analysis shall be listed on the AIHA Registry of Proficiency and shall have successfully completed NIOSH 582 (or equivalent) training.
        2. The laboratory conducting bulk sample analysis shall be accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).
        3. The laboratory conducting analysis of air samples shall be satisfactory participants in the NIOSH Proficiency Analytical Testing (PAT) program and AIHA Registry, and shall produce their PAT number and results on request.
        4. All air monitoring information must be placed on a Port of Seattle Air Monitoring Data Sheet – Asbestos, or a Port approved equivalent.

Adjust reference to Work Area Clearance article in Item F below, if necessary.

* + 1. See Article 3.14 of this specification section for additional requirements relating to Clearance Requirements.
    2. Air Monitoring Requirements
       1. Baseline/Pre-abatement Air Monitoring: Prior to beginning asbestos abatement tasks, the Contractor shall conduct pre-abatement air monitoring.
       2. Outside Work Area Air Monitoring: The Contractor shall daily conduct air monitoring to document acceptable condition or detect faults in the work procedures and engineering controls. Samples will be collected outside the work area at HEPA exhausts and at the decontamination entrance every shift.
       3. Personal Samples: The Contractor shall daily conduct representative personal monitoring in each abatement work area on each representative work activity. This requirement is a Port requirement and is greater in frequency then the requirements stated in the Washington State Department of Labor and Industries regulations. In addition to those required to be collected by the Contractor, the RM Project Monitor reserves the right to monitor airborne fiber levels produced by some workers to determine the effectiveness of work practices. This implies no agency relationship with the Contractor’s employees.

Adjust reference to Work Area Clearance article in Item 4 below, if necessary.

* + - 1. Clearance: The regulated area will remain in place until the Port certifies visual clearance and the Contractor’s post-abatement air sampling results meet acceptable levels. Article 3.14 details the work area clearance process.
      2. Where feasible, samples shall be collected according to the WISHA Reference Method (WAC 296‑62‑07735, Appendix A) and Detailed Procedure for Asbestos Sampling and Analysis (WAC 296‑62‑07737, Appendix B) and NIOSH Method 7400 (as revised). All samples shall be collected at a height of approximately 60 inches above the working floor for projects with 8-10 foot ceiling heights, unless otherwise directed.
    1. Airborne Fiber Counts
       1. Personnel Exposures on workers inside “regulated areas”. The Contractor shall notify the Engineer in writing regarding elevated levels above 0.1 f/cc. The Contractor and the Engineer will conduct an assessment of removal procedures. The Contractor shall identify corrective action and ensure that corrective action is taken to lower fiber counts at no additional cost or delay to the Port.
       2. Outside Work Area: If any air sample taken outside of the work (outside enclosures) exceeds 0.01 f/cc, the Contractor shall:
          1. The Contractor shall notify the Engineer immediately.
          2. Investigate with the Engineer for possible causes of elevated fiber levels. The Contractor shall ensure that corrective action is taken to lower fiber counts at no additional cost or delay to the Port.
          3. After corrective action is taken, the Contractor will resample the area. If airborne level is below 0.01 f/cc, the work may recommence with appropriate changes in work practices authorized by the Engineer. If the airborne fiber levels remain above 0.01 f/cc, The Contractor and the Engineer will continue to conduct assessments of removal procedures until acceptable air counts (0.01 f/cc or less) are reached. The Contractor shall ensure that corrective action is taken to lower fiber counts at no additional cost or delay to the Port.
          4. If the analytical results of any outside area sample exceed 0.05 f/cc for any sample taken, the Contractor shall stop all removal work, leave negative air system in operation and re-clean the entire work area. The Contractor shall notify the Engineer immediately. The Contractor shall not recommence work until the cause of the elevated count is corrected and the Port authorizes start up. The Port will not be charged for the cleanup time, materials, and air monitoring costs or delay costs. Delays resulting from non-compliant analytical results will not constitute an extension to the project time.
          5. If the Contractor has stopped work due to elevated airborne fiber counts, the Contractor shall secure air samples in the same area as the samples with elevated readings. These samples shall be analyzed by transmission electron microscopy in accordance with NIOSH 7402. The Contractor may not resume work until the average of airborne asbestos fibers in all samples taken is at or below 0.01 fibers per cubic centimeter. The cost of such analysis and any delays will be born solely by the Contractor.
    2. Analytical Methods: The following methods will be used for analyzing filters used to collect air samples:
       1. Twenty-five millimeter (25 mm) cellulose ester filters with 50 mm conductive cowl extensions will be used for all sampling. Sampling and analysis for personal samples will be conducted according to the OSHA/WISHA Reference Method. Area clearance samples will be analyzed according to the NIOSH Method 7400 using airflow rates between 1 - 10 liters per minute. At least 1200 liters of air will be sampled for area air samples. All inside and outside air sampling shall be continuous throughout work shift.
       2. TEM analysis will be NIOSH Method 7402.
    3. Laboratory Testing:
       1. The Contractor will have a qualified laboratory perform analysis of the air samples required to monitor abatement procedures. The laboratory results, signed by the lab manager, shall be returned to the site prior to the start of abatement for the same workshift the following day. A complete record of inspections and all air monitoring tests and results will be furnished to the Port and the Contractor daily.
       2. Written Reports: All air monitoring test results and daily inspection logs will be posted at the job board on a daily basis.
    4. Conflicts in air monitoring analytical results: QA/QC discrepancies identified in any of the reported analytical results will be resolved by TEM analysis (NIOSH 7402 method).
       1. The Contractor and the Engineer will conduct an assessment of air monitoring results.
       2. The Contractor shall resample the area. The RM Project Monitor may resample the area.
       3. The Port will not be charged for any and all costs associated with any additional sampling resulting from QA/QC air monitoring conflicts.
  1. ASBESTOS ABATEMENT - SPECIAL REPORTS
     1. Except as otherwise indicated, the Contractor must submit special reports directly to the Engineer and others affected by occurrence within (24) hours of occurrence requiring special report.
     2. Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of negative pressure system, rupture of temporary enclosures), the Contractor must prepare and submit a special report listing chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects and similar pertinent information. When such events are known or predictable, the Contractor must advise the Port in advance at earliest possible date.
     3. Reporting Accidents: Accidents must be reported in accordance with Section 01 35 29. The Contractor must prepare and submit reports of significant accidents, at site and anywhere else where work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

1. MATERIALS AND EQUIPMENT
   1. MATERIAL REQUIREMENTS
      1. General
         1. Deliver all materials in the original packages, containers or bundles bearing the name of the manufacturer and the brand name (where applicable).
         2. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient to prevent damage or contamination. Replacement materials shall be stored outside the work area until abatement is completed.
         3. Damaged, deteriorating or previously used materials shall not be used and shall be removed from the worksite and disposed of properly.
         4. Polyethylene sheeting for walls and stationary objects shall be a minimum of 6‑mil thick. For floors and all other uses sheeting of at least 6‑mil thickness shall be used in widths selected to minimize the frequency of joints. Polyethylene shall be fire retardant per UL Ratings.
         5. Method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and the Port and selected to minimize damage to equipment and surfaces. The Contractor will be responsible for any damage to equipment and surfaces created by this attachment of polyethylene sheeting. If the Contractor uses foam, the foam shall be fire retardant as per UL ratings and the Contractor shall cut the foam back to within 1/4 inch of base surface if applied to an asbestos-containing material for all other materials it shall be completely removed.
         6. Polyethylene sheeting utilized for worker decontamination enclosure shall be opaque white or black in color.
         7. Disposal bags shall be 6‑mil polyethylene, pre-printed with labels as required by EPA regulation 40 CFR 61.150 (a) (i) (iv) (v) or WAC 296‑62‑0072.
         8. Disposal drums shall be metal or fiberboard with locking ring tops; labeled in accordance with EPA regulation 40 CFR 61.150 (a) (i) (iv) (v).
         9. Warning signs as required by WAC 296‑62‑07721.
         10. Tape: Tape shall be capable of sealing joints of adjacent sheets of plastic sheet and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry wet conditions, including use of amended water. Minimum 2” wide tape must be used.
         11. Other materials: The Contractor shall provide all other materials such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area, and as required to complete the work as specified.
      2. Surfactant (wetting agent): Surfactant shall be a 50/50 mixture of polyethylene ester and polyoxyetylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water as specified by manufacturer. An equivalent surfactant shall be understood to mean a material with surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331‑11- “Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface-Active Agents.”
      3. Encapsulation Products
         1. Encapsulation materials shall be applied to asbestos containing material to control the release of asbestos fibers. Both “Bridging” and “Penetrating” encapsulation products will be used under this contract.
         2. The Contractor shall encapsulate the edges of ACM that remain throughout the project area with pink or other approved colored bridging encapsulant.
         3. Encapsulation materials shall conform with the following characteristics:
            1. Encapsulants should not be solvent-based or utilize a vehicle consisting of hydrocarbons. Tinting of the encapsulant may be required.
            2. Encapsulants shall be non-flammable.
            3. Contractor must provide certification that encapsulant is compatible with specified fireproofing replacement material.
      4. Enclosure
         1. Enclosure materials shall be fire-retardant and conform to the applicable local fire codes.
         2. The enclosures shall be constructed of materials such that when the enclosure is completed there is limited potential for impact damage to the enclosure and no potential for fiber release.
         3. Wood framing used for enclosure shall be pressure treated and fire retardant and shall conform to Uniform Building Code 23-4 and 23-5.
   2. EQUIPMENT
      1. General
         1. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2‑79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5‑83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings Appendix F: Recommended Specifications and operating procedures for the use of negative pressure systems for asbestos abatement shall be utilized so as to provide one work place air change every 15 minutes.

To calculate total air flow requirement:

Total ft 3/min = Vol. of work area (in ft 3)

15 min

To calculate the number of units needed for the abatement:

Number of units needed = [Total ft 3/min]

[Capacity of unit in ft 3/min x 70%]

If air-supplied respirators are utilized, estimate the volume of supplied air and add to work place air volume when calculating ventilation requirements. For small enclosures and glove bags, a HEPA filtered vacuum system may be utilized to provide negative air pressure. A sufficient quantity of air shall be exhausted to create a minimum pressure of -0.02 inches of water at all times within the enclosure with respect to outside the enclosure.

* + - 1. The Contractor shall install and maintain a continuous read strip chart, or similar digital recording differential pressure meter (manometer).
         1. Adhere strictly to manufacturer’s recommendations for calibration of manometer.
         2. Location of manometer must be approved by the Engineer and RM Project Monitor.
         3. Manometer records must be submitted, on 8-1/2 X 11 paper, weekly to the Engineer along with current calibration data.
         4. The manometer must be equipped with an audible system programmed to sound if pressure within the enclosure drops to -0.01 inches of water or lower with respect to pressure outside the enclosure.
      2. Type “C” air supplied respirators operated in the pressure demand mode with full face pieces and escape cylinders or HEPA filters are required by WISHA for negative pressure containment abatement work until the successful completion of final clearance air monitoring. Spectacle kits and eyeglasses must be provided for employees who wear glasses and who must wear full-face piece respirators. Respirators shall be provided that have been tested and approved by the National Institute of Occupational Safety and Health for use in asbestos contaminated atmospheres.
      3. Compressed air systems shall be designed to provide air volumes and pressures to accommodate respirator manufacturer’s specifications. The compressed air systems shall have a receiver of adequate capacity to allow escape of all respirator wearers from contaminated areas in the event of compressor failure. Compressors must meet the requirements of 29 CFR 1910.134(d). Compressors must have an in-line carbon monoxide monitor, and periodic inspection of the carbon monoxide monitor must be evidenced. Documentation of adequacy of compressed air systems/respiratory protection system must be retained on site at all times. This documentation will include a list of compatible components with the maximum number and type of respirators that may be used with systems providing air of sufficient quality (Grade D breathing air as described in Compressed Gas Association Commodity Specifications G‑7.1.)

At least two (2) dedicated airlines and respirators shall be available to the Port or Port Consultants or regulatory agency personnel at all times. The Contractor shall provide clean respirators in good repair for the Port or regulatory agency personnel use. The Contractor shall provide airlines for the Port, RM Project Designer, or regulatory agency personnel and Project Monitor use upon demand.

* + - 1. Full body disposable protective clothing, including head, body and foot coverings (unless using footwear as described in 2.02A.7) consisting of material impenetrable by asbestos fibers shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.
      2. Additional safety and fall protection equipment (e.g., hard hats meeting the requirements of ANSI Standard Z89.1‑1981, eye protection meeting the requirements of ANSI Standard Z87.1‑1979, safety shoes meeting the requirements of ANSI Standard Z41.1‑1967, disposable PVC gloves) as necessary shall be provided to all workers and authorized visitors.
      3. Non-skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.
      4. Only single-use, disposable towels and clothing will be allowed.
      5. A sufficient supply of disposable mops, rags and sponges for work area decontamination shall be available.
      6. For mini-enclosures and glove bags, a HEPA filtered vacuum system shall be utilized to provide negative air.
    1. Removal Equipment
       1. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided by the Contractor.
       2. Rubber dustpans and rubber squeegees shall be employed for cleanup.
       3. Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not metal.
       4. A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.
    2. Encapsulation Equipment
       1. Encapsulants shall be applied in accordance to manufacturer’s specifications.
       2. Tools, sprayers, and other additional support and fall protection equipment as needed.
       3. The nature of the encapsulant may affect the requirements for respiratory protection. Vapors that may be given off during encapsulant application must be taken into account when selecting respirators, if types other than air supplied are used.
    3. Enclosure Equipment
       1. Hand tools equipped with HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports if there is any need to disturb asbestos containing materials during this process. (As alternative asbestos material may be partially removed following proper removal procedures prior to the installation of supports and enclosures.)
       2. Tools, ladders, and other additional support equipment as needed.
    4. Scaffolding
       1. Any scaffolding used must be cleaned with no visible debris prior to bringing scaffolding on site, shall meet the requirements of Section 01 50 00 and completely free of debris during and after installation.
       2. Follow all manufacturer recommendations and all applicable regulations in the set-up, use and teardown of all scaffolding used.
       3. The Contractor’s Certified Asbestos Supervisor shall be on-site during all scaffolding set-up, use and teardown.
    5. Fabrication
       1. Equipment or items fabricated to suit this project shall be as selected by the Contractor and agreed upon by the RM Project Designer. Submit shop drawings and/or other information in sufficient detail for the RM Project Designer to review for approval.

1. EXECUTION
   1. INSPECTIONS
      1. Pre-Abatement
         1. The abatement work shall not begin until:
         2. Pre-abatement air monitoring has been conducted by the Contractor and the results have been reviewed and approved by the Port.
         3. The Contractor and the Port have inspected the site to ensure that work can begin.
         4. The work area enclosure system has been inspected and approved by the Port. When enclosure systems are in use, the Contractor’s Certified Asbestos Supervisor shall inspect the enclosure on a daily basis as it is being constructed and approve the completed enclosure, controls, and decontamination and waste load-out facilities when completed. Enclosure systems shall be smoke tested prior to ACM removal.
         5. Negative pressure ventilation and supplied air systems, if used, are functioning adequately. Contractor must test all systems. Submit written verification that the system has been tested as per specifications to the Engineer prior to ACM removal.
         6. All required pre-work submittals, notifications, postings and permits have been provided and are satisfactory to the Port (see Article 1.05 Submittals).
         7. All equipment for abatement cleanup and disposal are on hand.
         8. All worker and supervisor training, certification and medical monitoring are current and documentation is available on the job site.
      2. Throughout the Project: The Contractor’s competent person shall perform daily inspections of the site. The RM Project Monitor may perform routine inspections of the site to assure compliance with applicable regulations and the project plans and specifications. The Engineer, RM Project Designer and RM Project Monitor may also conduct spot checks throughout the project. The Contractor’s competent person must generate a written daily report. The Contractor’s competent person will also be required to co-sign the daily quality control report generated by the RM Project Monitor.

Adjust reference to Work Area Clearance article in Item C below, if necessary.

* + 1. Post-Abatement: The Clearance process is discussed in Article 3.14 of this specification.
  1. SITE SECURITY
     1. The work area is to be restricted only to authorize, trained and protected personnel. These may include the Contractor’s employees; employees of subcontractors; and Port employees and representatives; federal, state and local inspectors and other authorized or designated individuals.
     2. Secure the work area from access by occupants, staff or users of the building. Accomplish this where possible by locking doors, windows, or other means of access to the work area, or by constructing temporary framing with plywood or gypsum board barriers. All emergency exits/corridors must be kept open.
     3. Entry into the work area by unauthorized individuals shall be reported immediately by the Contractor to Port Security and the Engineer.
     4. For projects requiring the use of a negative pressure enclosure, a logbook shall be maintained in the clean room area of the worker decontamination system. Everyone who enters the work area must sign in, recording name, affiliation (Contractor, Port, regulatory agency, etc.), work phone number, purpose of entry, acknowledge existence, review and understanding of the project’s emergency contingency plan and time in and time out for each entry.
     5. Contractor shall be responsible for site security during abatement operations.
  2. EMERGENCY PLANNING
     1. Emergency contingency plans shall be developed by the Contractor for approval by the Port prior to initiation of any work. These plans shall be a component of the Contractor’s Health and Safety Plan.
     2. Emergency procedures shall be in written form and prominently posted in the clean room, adjacent to the containment in the project area, or as directed by the Port. Prior to performing any abatement activities, all personnel must read and sign these procedures to acknowledge an understanding of work site layout, location of emergency exits and the contents of the plan.
     3. Emergency planning shall include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of containment area, particularly barriers that may affect response capabilities. These notifications will be coordinated through the Engineer.
     4. Emergency planning shall include consideration of containment collapse (through negative pressure pull-down) or breach (hit, cut or torn by), fire explosion, toxic atmosphere, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in these procedures shall be provided and documented. Emergency planning shall include procedures to follow in the event of power disruptions during work in a negative air enclosure.
     5. Employees shall be trained in evacuation procedures in the event of workplace emergencies.
        1. For non-life threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the work place to obtain proper medical treatment.
        2. For a life-threatening injury or illness, measures to stabilize the injured worker, remove them from the work place and secure proper medical treatment shall take priority over worker decontamination.
     6. Telephone numbers of all emergency response personnel shall be prominently posted in the clean room, adjacent to the containment in the project area, or as directed by the Port. To assist the Contractor, the Port will provide a list of phone numbers for emergency response to the project at the Pre-Construction meeting.
     7. General Requirements
        1. If at any time after barriers or enclosures have been erected, any visible material is observed outside of the work area or if damage to the barrier or enclosure occurs, work shall immediately stop, repairs shall be made and debris and residue shall immediately be cleaned up using appropriate HEPA vacuuming and wet cleaning procedures. Area air monitoring shall be started immediately in the public space to measure the asbestos concentration in the public area as a result of breaching the enclosure.
        2. Clean and isolate the work area in accordance with these specifications.
     8. The Contractor must provide a minimum of three phone numbers at which its supervisory personnel may be contacted on or off site at any time during the contract duration. The telephone used outside the work area must be non-coin operated type.
  3. PERSONNEL PROTECTION REQUIREMENTS
     1. Training: Each individual accomplishing asbestos abatement shall be the bearer of current “Certified Asbestos Worker Certificate” issued by the Washington State Department of Labor and Industries.
        1. Special on-site training specific to equipment and procedures unique to this job site shall be performed as required.
        2. Training in emergency response and evacuation procedures shall be provided.
     2. Safety Meeting: The Contractor shall conduct a safety meeting at the beginning of the contract and weekly thereafter. Topic to be discussed include, but are not limited to: emergency exiting routes and procedures, location of telephone and emergency numbers, fire extinguisher locations, first aid kit, special precautions for toxic or hazardous materials (MSDS information), protective equipment, scaffolding procedures, proper use of ladders, electrical safety, previous week’s air sample results, etc. Minutes of these meetings shall be recorded with copies provided to the Engineer weekly. All attendees shall sign an acknowledgment of attendance.
     3. Protective Clothing: Provide protective equipment to all workers in the work area per Article 2.02 Equipment.
     4. Additional Protective Equipment: Respirators, disposable coveralls and footwear shall be provided by the Contractor to the Port, Port representative(s), or other authorized visitors inspecting the jobsite. Provide up to two personally issued respirators, and air lines where required by the Port. Removal of workers from the work area to provide airlines will not be acceptable.
  4. PREPARATION OF THE WORK AREA
     1. Post barrier tape and caution signs meeting the specifications of WAC 296‑62‑07711 at the locations and approaches to a location where airborne concentrations of asbestos may be expected to exceed the pre-abatement concentration. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of work place enclosures or barriers. Placement of these signs will be behind the construction barrier walls erected by the Contractor and shall not be placed in a location visible to the public outside of the project area.
     2. The Contractor shall coordinate with the Port to ensure that Port crews perform any required shut down and lock out of utilities such as electric power, water, or HVAC lines to the project area when possible. Contractor shall complete Utility Shutdown Request Forms as soon as possible, but no later than 72 hours in advance of shutdown needs.
     3. All conduit joints, junction boxes, motor connections, motors, conveyors, control panels and associated equipment in the work areas shall be protected from amended water. All wire in conduit that passes through the work area shall remain energized at all times; however, the Contractor is responsible for all electrical safety.
     4. Control panels, gauges, etc., in the project area may require Port access during abatement. Contractor shall coordinate with the Port to identify which items/areas must remain accessible to Port personnel. Provide access for those items/areas without the need for personnel to enter the abatement enclosure.
     5. Pre-clean, remove furnishings and install drop cloths using HEPA filtered vacuums or wet cleaning methods as appropriate. Do not use methods that would raise dust such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not disturb asbestos containing materials during the pre-cleaning phase.
     6. Remove from the work area all objects that are movable to protect them from potential asbestos contamination.
  5. GENERAL REMOVAL PROCEDURES
     1. Wet all asbestos containing material with amended water solution using equipment capable of providing a fine spray mist. Avoid knocking the material loose during the wetting operation. Saturate the material to substrate prior to removal; however, do not allow excessive water to accumulate in the work area. Keep all removed material saturated until it can be containerized for disposal. Maintain a high humidity in the barrier or enclosure throughout the abatement period by misting or spraying to ensure material saturation and reduce the potential for elevated airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials. Nonetheless, they shall be used in all cases.
     2. Saturated asbestos containing material shall be removed in manageable sections. Containerize removed material immediately and prior to moving it to a new location for continuance of work. Adjacent areas shall be periodically sprayed and maintained in a saturated condition until all visible material is sealed and removed from the barrier or enclosure.
     3. Removed material shall not be dropped or thrown. Remove material intact or as components whenever possible and carefully lower to the floor. If this cannot be feasibly accomplished, a dust-tight chute shall be constructed to transport the material to containers on the floor, or the material may be containerized at elevated levels (e.g., on scaffolds) and carefully lowered to the ground by mechanical means.
     4. Double bag all waste material prior to removal from the enclosure system or immediately upon removal of the barrier (glove bag).
     5. Disposal bags shall not be overfilled. Additionally, handcarts or equivalent shall be used to transport waste containers or materials. Waste containers or materials shall be raised and securely transported, and shall not be dropped or slid.
     6. Disposal containers shall be securely sealed to prevent accidental opening and leakage by taping in a gooseneck fashion, then labeled and dated. Do not seal bags with wire or cord. Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming.
     7. Large components removed intact may be wrapped in 2 layers of reinforced 6‑mil polyethylene sheeting secured with tape for transport to the landfill.
     8. The work area shall be cleaned of all suspect ACM prior to the visual inspection by the designated Project Monitor and Project Designer. If any accumulation of residue is observed, it will be assumed to be asbestos. Re-cleaning may be required, at no additional cost to the Port, until all suspect material is removed. Re-cleaning and inspection will continue until no visible suspect material remains. After the work area passes the visual inspection, the Contractor shall perform encapsulation of all cleaned surfaces.

Adjust reference to Work Area Clearance article in Item I below, if necessary.

* + 1. Refer to Article 3.14 of this specification for work area clearance process.

Paragraphs 3.07 through 3.12: Delete paragraphs for specific abatement procedures that do not apply to this project.

* 1. CONTAINMENT ENTRY AND EXIT PROCEDURES
     1. Personnel Entry and Exit
        1. All workers and authorized personnel shall enter the containment area through the worker decontamination enclosure system.
        2. All personnel who enter the containment area must sign the entry log located in the clean room upon entry and exit.
        3. All personnel before entering the containment area shall read and be familiar with all posted regulations, personnel protection requirements (including work place entry and exit procedures), and emergency procedures. A sign-off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.
        4. When entering a containment, all personnel shall proceed first to the clean room, remove all street clothes and don appropriate respiratory protection and disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be utilized as required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the containment area.
        5. Personnel wearing designated personal protective equipment shall proceed from the clean room through the shower room and equipment room to the main containment area.
        6. Before leaving the containment area, all personnel shall remove gross contamination from the outside of respirators, air hoses, and protective clothing. Each person shall clean bottoms of protective footwear just prior to entering the equipment room.
        7. Personnel shall proceed to equipment room where they remove all protective equipment except respirators. Deposit disposable clothing into appropriately labeled containers for disposal.
        8. Reusable contaminated footwear shall be stored in the equipment room when not in use in the containment area. Upon completion of abatement it shall be disposed of as asbestos contaminated waste (rubber boots may be decontaminated for reuse at the completion of the abatement).
        9. Still wearing respirators, personnel shall proceed naked to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator, and shower and shampoo to removal residual asbestos contamination. The HEPA filters on airline respirators are for emergency escape only. The airline may not be disconnected in the equipment room. The airline shall be placed in a bucket of clean water or hung on a hook next to the shower. A powered air purifying respirator face piece will have to be disconnected from the filter/power pack assembly, which is not waterproof upon entering the shower. A dual cartridge respirator may be worn into the shower. Tape over inlet(s) into HEPA filter(s) between usages.
        10. After showering and drying off, proceed to the clean room and don clean disposable clothing if there will be later re-entry into the containment area or street clothes of it are the ends of the work shift.
        11. These procedures shall be posted in the clean room and equipment room or as directed by the Engineer.
     2. Waste Container Pass-Out Procedures
        1. Asbestos contaminated waste that has been containerized shall be transported out of the containment area through the material decontamination facility.
        2. Waste pass-out procedure shall utilize two teams of workers, an “inside” team and an “outside” team.
        3. The inside team wearing appropriate protective clothing and respirators for inside the containment area shall clean the outside, including bottoms, of properly labeled containers (bags, or wrapped components) using HEPA vacuums and wet wiping techniques. The workers shall then enclose the single layered ACM waste with another 6‑mil layer of plastic sheeting or disposal bag. The double-bagged material must be carefully placed into the middle chamber of the material decontamination unit. No worker from the inside team shall further exit the containment area through this airlock.
        4. The outside team, wearing protective clothing and HEPA-filtered respirators, shall enter the airlock from outside the containment area, enclose the labeled container in a second clean, labeled, 6‑mil polyethylene bags and remove them from the airlock to outside and placed into a secure storage/transport container. No worker from the outside team shall further enter the containment area through this airlock. Public view shall be blocked with a temporary screen constructed around the load out during pass-out.
        5. The exit from this airlock shall be secured to prevent unauthorized entry.
  2. NEGATIVE PRESSURE ENCLOSURE
     1. Prepare work area as indicated in Article 3.05 this section.
     2. Verify shut down and lock out all heating, cooling and air conditioning system (HVAC) components that are in, supply, or pass through the containment area, if possible. Seal all ducts and smoke test the containment before beginning abatement work within the enclosure.
     3. Pre-clean all fixed objects in the containment area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery bind grills or gratings where access may be difficult, but contamination significant. Pay particular attention to wall, floor, and ceiling penetrations behind fixed items. After pre-cleaning, enclose fixed objects in 6-mil polyethylene sheeting and seal securely in place with tape.
     4. Seal off all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers and all other openings between the containment area and uncontaminated areas outside of the containment area including the outside of the building, tunnels and crawl spaces with 6‑mil polyethylene sheeting and tape (see Article 3.05).
     5. Cover floors in the containment area with polyethylene sheeting as follows:
        1. Seal all floor drains and other floor openings in area with 6‑mil sheeting and duct tape. Do not allow any water into the Port’s waste drain system.
        2. Floors shall be covered with three (3) individual layers of 6‑mil (minimum) sheeting. Use “tattle-tales” beneath sheeting in order to detect water leaks from the enclosure. The RM Project Monitor shall approve each layer of sheeting prior to installation of next layer. Protect layers of sheeting as necessary against rips and tears. Install one (1) additional layer 6‑mil poly sheeting as drop clothes to aid in cleanup of bulk materials.
        3. Plastic shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. A distance of at least 6 feet between seams is required. Do not locate seams at wall/floor joints or cracks in the concrete flooring. Pre-seal all cracks in floors before placing any plastic to the satisfaction of the Engineer.
        4. Floor sheeting shall extend to at least 12” up the sidewalls of the containment area.
        5. Sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material. Vinyl sheeting may be used for improved traction of floors.
     6. Provide sufficient lighting throughout the work area to maintain a minimum lighting level of 50-foot candles at any surface where asbestos is to be removed. Hand held lights, such as flashlights, are not acceptable except for augmentation beyond 50-foot candle minimum illumination.
     7. Clearly identify and maintain emergency and fire exits from the work area.
     8. Cover walls in the containment area with polyethylene sheeting as follows:
        1. Seal all opening in wall with critical barriers with 6‑mil polyethylene sheeting and duct tape. Insure airtight seal.
        2. Each wall surface shall be covered with three (3) layers of 6‑mil polyethylene sheeting.
        3. Plastic shall be sized to minimum seams. Seams shall be staggered and separated by a distance of at least 6 feet.
        4. Wall sheeting shall overlap floor sheeting by at least 12 inches beyond the wall/floor joint to provide a better seal against water damage and for negative pressure.
        5. Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This will require additional support/attachment when negative pressure ventilation systems are utilized. Wall sheeting shall not be taped to asbestos materials.
        6. Install one or more transparent plastic viewing ports in the walls of the enclosure in such a manner to allow unobstructed viewing of all components within the enclosure, which are involved in the project. Existing windows shall be utilized for viewing ports as needed. Movable curtains on the outside shall cover viewing ports. The Engineer shall approve location of view port.
     9. Worker Decontamination Facility
        1. Worker decontamination enclosure systems shall be provided for workers entering or exiting the containment area. The worker decontamination shall consist of a clean change room, a shower and an equipment room, each separated from each other and from the containment area by curtained doorways. The decontamination unit shall be constructed of metal, wood or plastic framing systems. A worker decon facility is required for any Class I asbestos work involving greater than 25 linear feet or 10 square feet. Remote decontamination facility may be required for projects less than 25 linear feet or 10 square feet and class III work; coordinate with the Engineer for location.
        2. The worker decontamination enclosure systems constructed at the work site shall utilize 6‑mil opaque black or white polyethylene sheeting or other acceptable materials for privacy.
        3. The worker decontamination facility should be constructed contiguous to the negative - pressure work area or regulated area for Class I work. Where construction contiguous to work area is not feasible, the decontamination facility shall be constructed with a polyethylene lined tunnel connecting the decon facility to the work.
        4. Entry to and exit from all material decontamination chambers and decontamination enclosure systems shall be through curtained doorways consisting of two (2) sheets of overlapping polyethylene sheeting. One sheet shall be secured at the top and left side, the other sheet at the top and right side. Both sheets shall have weights attached to the bottom to insure that they hang straight and maintain a seal over the doorway when not in use. Doorway designs providing equivalent protection and acceptable to the Engineer may be utilized. Inverted T double sheet doorway with a flap door is also acceptable.
        5. Access between any two rooms in the decontamination enclosure system shall be through a curtained doorway. Pathways in from clean to contaminated, and out from contaminated to clean in the containment area shall be clearly designated.
        6. Clean room shall be sized to adequately accommodate the work crew. Benches shall be provided as well as storage for employees’ street clothes. Shelves for storing respirators shall also be provided in this area. Clean work clothes (if required under disposables); clean disposable clothing, replacement filters for respirators, towels and other necessary items shall be provided in adequate supply at the clean room. A location for postings shall be provided in this area. Lighting, heat, and electricity shall be provided as necessary for comfort. This shall not be used for storage of tools, equipment or materials, except as specifically designated by the RM Project Designer.

Adjust reference to Disposal Procedures article in Item 7 below, if necessary.

* + - 1. Shower room shall be lighted, heated and contain one or more showers as necessary to adequately accommodate workers. Each showerhead shall be supplied with hot (100 degrees F. minimum) and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. The Contractor shall supply an adequate supply of soap, shampoo and towels at all times. See Article 3.15 Disposal Procedures, Paragraph A for water filtration/disposal procedures.
      2. The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated. A walk-off pan, a small children’s swimming pool or equivalent, filled with water shall be located in the containment area just outside the equipment room for workers to clean off foot coverings and contaminated air hoses after leaving the containment area and prevent excessive contamination of the worker decontamination enclosure system. A 6‑mil polyethylene bag for collection of disposable clothing shall be located in this room. Contaminated foot wear (e.g., rubber boots, other reusable footwear) shall be stored in this area for reuse the following workday.
    1. Material Decontamination Facility and Emergency Exits
       1. The Material Decontamination Facility shall be constructed separate from the worker decontamination facility. Wherever possible, this shall be located where there is direct access from the containment area to the outside of the building.
       2. The Material Decontamination Facility shall consist of an airlock, a container storage area and another airlock with access to outside the containment area.
       3. The Material Decontamination Facility shall be constructed in similar fashion to the worker decontamination facility using similar materials and airlock and curtain doorway design.
       4. This Material Decontamination Facility airlock shall not be used to enter or exit the containment.
       5. Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the containment area. They shall be secured to prevent access from uncontaminated areas and permit emergency exiting. These exits shall be properly sealed with polyethylene sheeting, which can be cut to permit egress if needed. These exits may be the worker decontamination facility, the material decontamination facility and/or other alternative exits satisfactory to the Port Fire officials.
    2. Air Pressure Differential
       1. Provide a fully operational negative air system within the work area and continuously maintain a pressure differential across work area enclosures of negative 0.02 inches column of water. Demonstrate to the RM Project Monitor the pressure differential by use of a pressure differential meter or a manometer recording with strip chart, or similar digital equipment with alarm before disturbance of any asbestos containing materials.
       2. Provide fully operational negative pressure systems supplying a minimum of one air change every 15 minutes. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (cfm) for the work area by dividing this volume by the air change rate.
          1. Vent to outside of building, unless authorized in writing by the Engineer.
       3. Supplemental Makeup Air Inlets: Provide where required for proper airflow through the workspace in location approved by the RM Project Designer.
       4. Test negative pressure system for a 24 hour time period before any asbestos-containing material is wetted or removed. After the work area has been prepared, the decontamination facility set up, and the exhaust unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of negative pressure system to the Engineer. Indications of correct negative air system shall include the following:
          1. Plastic barriers and sheeting move lightly in toward work area.
          2. Curtain of decontamination units moves lightly in toward work area.
          3. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from the Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.
          4. Use smoke tubes to demonstrate a positive motion of air across all area in which work is performed.
          5. Use a differential pressure meter or manometer to demonstrate a pressure difference of at least 0.02 inches column of water across every barrier separating the Work Area from the balance of the building or outside.
          6. Modify the Negative Pressure System as necessary to successful demonstrate the above.
          7. Contractor’s on-site competent person shall smoke test the NPE at least once every shift and document testing in daily log.
       5. Provide a minimum of one back-up negative air for every four primary negative air units used. A minimum of one back-up negative air unit will be required if less than four primary units are used. The back-up negative air unit(s) shall be of equal capacity to primary unit(s).
    3. Maintenance of Containment Barriers and Worker Decontamination Facility
       1. Following completion of the construction of all polyethylene barriers and decontamination system enclosures, the negative air machines shall be turned on. The Contractor shall continuously maintain a pressure differential across work area enclosures a minimum of negative 0.02 inches column of water for a 24‑hour settling time to insure that barriers will remain intact and secured to walls and fixtures before beginning actual abatement activities.
       2. All polyethylene barriers inside the containment, in the worker decontamination enclosure system, in the waste container pass-out airlock and at partitions constructed to isolate the area from occupied areas, shall be inspected by the Contractor at least twice daily including prior to the start of each day’s abatement activities. Document inspections and observations into the daily project log and submit to the Engineer weekly at the weekly progress meetings.
       3. Damage and defects in the enclosure system are to be repaired immediately upon discovery. Use smoke tubes to test the effectiveness of the barrier system when directed by the RM Project Monitor.
       4. At any time during the abatement activities after barriers have been erected, if visible material is observed outside of the containment area or if damage occurs to barriers, the work shall immediately stop, repairs made to the barriers, and debris/residue cleaned up using appropriate HEPA vacuuming and wet mopping procedures.
       5. If air samples collected by the RM Project Monitor or the Contractor outside of the containment area during abatement or pre-abatement activities indicate airborne fiber concentrations greater than 0.01 f/cc, or the pre-abatement concentrations, refer to article 1.07.H of this specification section.
       6. Install and initiate operation of negative pressure ventilation equipment as needed to provide one air change in the containment area every 15 minutes. Openings made in the enclosure system to accommodate these units shall be made airtight. If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional reinforcement. Insure that adequate power supply is available to satisfy the requirements of the ventilating units. Negative pressure ventilation units shall be HEPA filtered and exhausted to the outside of the building to locations approved by the Engineer. They shall not be exhausted into occupied areas of the building. Twelve inch diameter extension ducting shall be used to reach from the containment area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to ensure that the negative pressure ventilation exhaust does not release fibers into uncontaminated building areas.
    4. Once constructed and reinforced as necessary with negative pressure ventilation units in operation as required, test enclosure for leakage utilizing smoke tubes. Repair or reconstruct as needed.
    5. Clearly identify and maintain emergency and fire exits from the containment area.
    6. Remove, clean and enclose in polyethylene the ceiling mounted objects such as lights and other items that may interfere with the abatement process and were not previously cleaned and sealed off. Utilize localized spraying of amended water and/or HEPA vacuums to reduce fiber dispersal during the removal of these fixtures.
    7. Removal of Building System Components, Finishes and Appurtenances: Remove lighting fixtures, clean and store as directed by the Engineer. Remove carpet and suspended ceiling system, including hangers. Replace building system components as specified or as directed by the Engineer upon completion of abatement activity per all applicable codes and regulations.
    8. Alternate Procedures:
       1. Procedures described in this specification are to be utilized at all times.
       2. If non-specified procedures are to be considered, a request must be made in writing using a Port Request for Information form to the Engineer providing details of the problem encountered and recommended alternates.
       3. Alternate procedures shall provide equivalent or greater protection than the procedures they replace.
       4. An alternate procedure must be approved in writing by the RM Project Designer prior to implementation.
  1. CORE DRILLING
     1. The Contractor shall employ, at a minimum, the following procedures for core drilling through terrazzo flooring and other asbestos-containing materials. In lieu of subparagraph 2, the Contractor may develop a negative exposure assessment (NEA) in accordance with WAC 296-62-07709. The NEA shall be reviewed by the Engineer and RM Project Designer.
        1. Establish the boundaries of the regulated areas at both areas of work.
        2. Construct a mini-enclosure in accordance with WAC 296-62-07712 using 6-mil fire retardant polyethylene sheeting.
        3. Employ wet coring methods.
        4. Provide workers at both areas of work and establish core capture methods.
        5. Clean-up debris caused by core drilling activities.
        6. Appropriately package and dispose of waste generated by core drilling activities.
  2. CEILING SYSTEM AND CEILING PLENUM CLEANING
     1. Properly clean ceiling system and plenum in the locations impacted by the work
        1. Establish the boundaries of the regulated area.
        2. Construct a mini-enclosure below the ceiling system.
        3. Within mini-enclosure, HEPA vacuum the edges of the ceiling tiles to be removed.
        4. Remove ceiling tiles as necessary to gain access above the ceiling system. Set aside ceiling tiles for future use by the Port.
        5. Clean top surfaces of the ceiling tile and grid systems that are within reach of the worker.
        6. Wet wipe all other surfaces (HVAC, plumbing, cable trays, and other ceilings fixtures in the ceiling plenum).
        7. Remove all visible debris in the work area from the ceiling plenum. Take care not to disturb ACM. Remove acoustic batting as asbestos contaminated material and dispose of properly.
        8. Maintain HEPA vacuum or negative air machine in continuous operation.
        9. After completion of visual observations and clearance monitoring, install 6-mil fire retardant polyethylene sheeting over the ceiling opening and turn over the cleaned ceiling tiles to the Port.
  3. SPOT REMOVAL OF FIREPROOFING – GLOVEBAG METHOD
     1. Work of this Article is limited to spot removal of fireproofing and shall be employed in conjunction with the procedures outlined in Article 3.12, if a ceiling system exists in the area of the work order.
     2. Attach glovebag to fireproofing by use of foam insulation. Perform glovebag procedures as outlined in WAC 296-62-07712 and as listed below After collapse of glovebag with HEPA vacuum, score foam insulation within ¼” of fireproofing.
        1. Utilize a team of two asbestos workers to perform each glovebag activity.
        2. Install glovebags according to glovebag manufacturer's recommendations.
        3. The use of movable glovebags is prohibited.
        4. A glovebag shall be used only once.
        5. Perform glovebag procedures as follows:
           1. Insert wand from garden sprayer through water sleeve.  Duct tape water sleeve tightly around the wand to prevent leakage.
           2. Use smoke tube and aspirator bulb to test seal.  Gently squeeze glovebag and look for smoke leaks.  Seal leaks and retest.
           3. Thoroughly wet all removed asbestos-containing material within the glovebag during this entire operation.
           4. Remove tools, through gloves or tool pouch by inverting, twisting glove, taping at twist to seal, and severing glove at midpoint of tape.
           5. Collapse glovebag by inserting HEPA vacuum. Twist bag several times at the top of bag. Tape to secure.
           6. Place appropriately labeled 6‑mil plastic bag around glovebag. Score glovebag above taped seal to remove from the ceiling and place inside 6‑mil bag. Seal 6‑mil bag around disassembled glovebag.
  4. CLEAN-UP OF ASBESTOS-CONTAINING DEBRIS
     1. Work of this Article is limited to the cleanup of a small quantity of amassed debris that has fallen from an architectural finish, fireproofing, or thermal insulation on pipes, boilers and other equipment.
     2. Remove asbestos-containing debris and decontaminate the area involved using the following sequence:
        1. Shut down all ventilation directed into room.
        2. Seal entry to Work Area with 6-mil polyethylene. Slit polyethylene for entry. Install a flap to cover the slit automatically; tape slit closed after entry.
        3. Start HEPA vacuum or HEPA filtered fan unit before entering the area.
        4. Use the HEPA vacuum to clean a path at least 6 feet wide from the entry point of the Work Area to the site of the fallen material.
        5. Remove all small debris with the HEPA vacuum.
        6. Pick up large pieces of debris and place in the bottom of a disposal bag. Place pieces in the bag without dropping, avoiding unnecessary disturbance and release of material. Wet contents of bag.
        7. Remove all remaining visible debris with HEPA vacuum.
        8. HEPA vacuum, in two directions each at right angles to the other, an area 3 feet beyond the location that visible debris was found.
        9. Place a polyethylene drop cloth immediately on top of the HEPA vacuumed area before performing any repair work on site from which fall-out occurred.
        10. HEPA vacuum the site from which material fell, removing all loose material that can be removed by the vacuum’s suction.
        11. Repair or remove remaining material.
        12. HEPA vacuum ladder and/or any tools used and pass out of the Work Area.
        13. HEPA vacuum all surfaces in the room that may have been contaminated, starting at the top of wall and working downward to the floor. Then start at corner of floor farthest from entrance to Work Area and proceed towards entrance.
        14. HEPA vacuum the floor using a floor attachment with rubber floor seals and adjustable floor to attachment height. Adjust the height so that the rubber seals just touch the floor if carpeted and are within 1/16 inch of hard surface floors. Vacuum the floor in parallel passes with each pass overlapping the previous by one-half the width of the floor attachment. At the completion of one cleaning, vacuum the floor a second time at right angles to the first.
     3. If there are objects in the Work Area, perform the following:
        1. Decontaminate objects wherever possible on a plastic drop sheet.
        2. HEPA vacuum all surfaces of object and immediate area before moving the object.
        3. Pick-up object, if possible, and HEPA vacuum all surfaces.
        4. Hand to off-sheet worker who will wet-clean object, if possible, and place in storage location.
        5. Decontaminate area where object was located by HEPA vacuuming twice, in perpendicular directions. Wet clean if necessary to remove any debris.
        6. Return object to its original location.
  5. PROCEDURES FOR EMERGENCY SPILLS AND UNCONTROLLED RELEASES OF ASBESTOS OR PACM
     1. This procedure shall be used in any situation involving an uncontrolled release of asbestos or PACM such as, but not limited to, dislodging of asbestos materials by accident, a rupture in a containment, breaking of a glove bag, tearing open of previously wrapped material, spills of drums for disposal, the use of asbestos contaminated clothing, tools or equipment in an unregulated area, or similar event where asbestos or PACM may be or has the potential to be introduced into the air in an uncontrolled manner.
     2. Specific Work Procedure
        1. Notify the Engineer.
        2. Evacuate the immediate area of all unprotected personnel.
        3. Establish a regulated area. The work area shall be identified and access restricted in any manner that minimizes the number of persons within the work area and protects persons outside the work area from exposure above the action level in accordance with WAC 296‑62-077. Seal all openings into work area including drains.
        4. Use caution to assure personnel are not tracking asbestos-containing debris to areas outside the regulated area and spreading the contamination.
        5. Immediately contact the Engineer. Contact the Airport Duty Manager (ADM) at (206) 787-4682 and request to stop and secure all conveyors and other movable equipment in the area that may be contaminated so as to prevent the spread of contamination. Contact ADM at (206) 787-4682 to request to shut off all intakes and exhaust vents in the area. Seal all vents.
        6. Wet down, encapsulate and pick up large chunks and place in a properly labeled asbestos disposal bag. Asbestos disposal bags shall meet the requirements of WAC 296‑62‑07721.
        7. Vacuum the entire area using a HEPA equipped vacuum.
        8. Wet wipe the entire contaminated area with clean wet rags and/or mops.
        9. Encapsulate all surfaces within the work area. Protect equipment, furnishings and other items in work area during encapsulation.
        10. The cleanup procedures shall include the entire affected area.
        11. Contractor and Project Monitor logs for the shift when the spill occurred shall include a description of spill and corrective action.
        12. Provide the Engineer with a detailed written report of the causes of the accident, the Contractor’s response, the results of actions taken and steps to be implemented to avoid future occurrences within 24 hours of the spill.
        13. All work performed under this procedure shall be undertaken by Certified Asbestos Workers in protective clothing with half‑face respirators as a minimum. Air monitoring shall be undertaken as specified in Article 1.07.
  6. WORK AREA CLEARANCE
     1. The abatement work is complete when the work area is visually clean and airborne fiber levels have been reduced to the level specified below.
     2. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to the specified level, the Contractor will conduct a final visual inspection of the Work Area for completeness of work and the presence of any visible debris following all abatement per ASTM E1368-05, “Standard Practice for Visual Inspection of Asbestos Abatement Projects.” Following the Contractor’s successful visual inspection, the work area must pass the following visual inspection process.
        1. The RM Project Designer will perform a visual inspection of the project area and note deficiencies. If less than 10 sq. ft. of surfacing material is removed, the visual inspection may be performed by an AHERA Project Designer, Construction Manager, Engineer, or RM Project Monitor.
        2. If deficiencies are noted, the inspector shall create a punch list and forward to the Contractor. The Contractor shall resolve all punch list items.
        3. If the Contractor fails the visual inspection after a punchlist has been created, the Port will not be charged for the cleanup time, materials, air monitoring costs, or delay costs. Delays resulting from non-compliant visual inspections will not constitute an extension to the project time.
        4. Once the inspector gives the final visual clearance, the Port will provide the Contractor with signed clearance forms.
        5. Upon receipt of signed visual clearance forms, the Contractor shall apply a lockdown type asbestos encapsulant to surfaces on which asbestos has been removed.
           1. In cases when negative pressure enclosures have been used, maintain operation of negative air system during the encapsulation process.
           2. Mix ratio of encapsulant shall be per manufacturer’s recommendations.
           3. Apply encapsulant with airless sprayer onto substrate.
        6. After encapsulation, the Contractor shall conduct final clearance sampling as per this Section.
        7. Allow encapsulant to dry for eight (8) hours (minimum) or until surfaces are dry before removing containment.
     3. Following the successful visual inspection, the Contractor will secure aggressive air clearance samples and have them analyzed according to the following procedures.
        1. All enclosures clearance samples will be taken using aggressive sampling techniques as follows.
           1. Before sampling pumps are started, the exhaust from forced air equipment (leaf blower with at least 1 horsepower electric motor) will be swept against the walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 1 minute per 1,000 square feet of area. Fans may be used to circulate air within the work enclosure.
           2. Samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations and sites near windows, doors or vents in areas coinciding with pre-abatement sample locations.
           3. The HEPA machines must be left running during the procedure.
     4. General: The number and volume of air samples taken and analytical methods used will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.
     5. In each work area after completion of all cleaning work, a minimum of one (1) sample will be taken at a flow rate of 1 to 12 liters per minute with a minimum of 1,200 liters of air to be sampled and analyzed as follows:
        1. Analysis: Fibers on each filter will be measured using the NIOSH 7400 procedures and WISHA reference method. This shall include, at a minimum, the analysis of two blanks from the same lot as the filters used for sample collection. The Contractor shall provide the blanks for analysis.
        2. Release Criteria: Decontamination of the work area is complete when every clearance sample is equal to or less than 0.01 fibers/cc, or less than pre-abatement levels, whichever is lower. If any sample exceeds 0.01 fibers/cc, then the decontamination is incomplete and re-cleaning is required.
        3. The services of a testing laboratory will be employed by the Contractor to perform laboratory analysis of the air samples. Verbal laboratory results will be available within eight (8) hours of taking clearance samples. A complete record of all air monitoring tests and inspections will be furnished to the Engineer by the Contractor within 24 hours of sample collection.
     6. After acceptable clearance samples are received, the Contractor will provide the Engineer with signed clearance forms with air sampling results attached.
     7. The Project Monitor shall conduct a final visual inspection after all containment and equipment has been removed.
     8. Clearance of Mini-Enclosures and Glovebags will be in accordance with Washington State Department of Labor and Industries (L&I) WRD 23.10 (page C-8) and as follows:
        1. The project duration is one day or less and the asbestos-containing waste does not exceed one standard size bag of waste or glovebag of waste.
        2. None of the personal air sample results exceed the PEL or the pre-abatement air sample result, whichever is lower.
        3. Personal air samples include all work activities and final cleaning of the work space.
        4. Air monitoring results shall be obtained prior to the dismantling of the mini-enclosure or regulated area and before the area is re-occupied.
        5. In lieu of performing personal air sampling, the Contractor may rely on a Negative Exposure Assessment (that meets the requirements of WAC 296-62-077), provided this data has been reviewed by the Engineer; however, the above criteria in subparagraph 1 still applies.
  7. DISPOSAL PROCEDURES
     1. Shower water shall be drained, collected and filtered through a system with at least a 5.0-micron particle size collection capability.
     2. Sealed and labeled containers of asbestos-containing waste shall be removed from the immediate project area and transported to the prearranged disposal location as the work progresses. Remove waste containers from the site between midnight and 5:00 a.m. in a cart covered with black plastic sheeting, unless the Port has approved an alternate time in writing.
     3. Labeling: Each bag of asbestos waste shall be pre-labeled in accordance with WAC 296-62-07721 as follows:

|  |
| --- |
| DANGER  CONTAINS ASBESTOS FIBERS  MAY CAUSE CANCER  CAUSES DAMAGE TO LUNGS  DO NOT BREATHE DUST  AVOID CREATING DUST |

In addition, a second pre-printed label must be present on each bag in accordance with 49 CFR Parts 171 and 172 of the U.S. Department of Transportation hazardous materials regulations, as follows:

|  |
| --- |
| RQ HAZARDOUS SUBSTANCE  SOLID, NOS  ORM-E, NA 9188  (ASBESTOS) |

The Contractor shall mark each container with a permanent label listing the Contractor’s name, the name of the Certified Asbestos Supervisor, the Contractor’s phone number, the Contractor’s certification information, the date of removal, the location where the waste was generated, the facility owner (Port of Seattle), the Port of Seattle contract number, and the Port project number.

* + 1. All demolition debris materials, including asbestos-containing materials, except those containing substances classified as hazardous or dangerous by controlling local, state or federal regulatory agencies, shall upon their demolition became the property of the Contractor. All such material, including those containing hazardous or dangerous substances, shall be removed and properly disposed of away from the site and on property not owned by the Port of Seattle.
    2. Disposal must occur at an authorized site in accordance with regulatory requirements of PSCAA, Regulation III, Article 4 and applicable state and local guidelines and regulations.
    3. Waste shipment, waste manifest, and disposal records shall be delivered to the Port within 45 days of completion of the abatement work. This information shall document the pickup site and disposal site, the quantity of the asbestos waste and the type of containers used. The Contractor and the Disposal Site Operator shall sign the waste manifest. If a separate hauler is employed, their name, address, telephone number and signature shall also appear on the manifest.
    4. Transportation to the Landfill
       1. All transportation of asbestos-containing waste material shall adhere to federal, state and local regulations, including, but not limited to:
          1. 49 CFR Parts 171 through180
          2. 49 CFR Part 107
       2. Once drums, bags and wrapped components have been removed from the work areas, they shall be loaded into an enclosed or covered truck for transportation.
       3. Utilize hand trucks or carts when moving containers. Containers shall not be dragged, dropped, or thrown.
       4. The enclosed cargo area of the truck shall be free of debris and lined with 6‑mil polyethylene sheeting to prevent contamination from leaking or spilling containers. Floor sheeting shall be installed first and extend up the sidewalls. Wall sheeting shall be overlapping and taped into place.
       5. Containers shall be placed on level surfaces in the cargo areas and packed tightly together to prevent shifting and tipping. Large structural components shall be secured to prevent shifting and bags placed on top. Do not throw containers into truck cargo area.
       6. Personnel transferring or loading asbestos containing waste shall be protected by disposable clothing (including head, body; and foot protection) and, at a minimum, half‑face respirators using HEPA filters.
       7. Any debris or residue observed on containers or surfaces outside the work area shall be immediately cleaned up using HEPA filtered vacuum equipment, or wet methods.
       8. Large metal dumpsters are sometimes used for asbestos waste disposal. These shall have doors or tops that can be closed and locked to prevent vandalism or other disturbances. Containers shall be placed, not thrown, into these containers to avoid rupture.
       9. Asbestos-containing or-contaminated wastes shall be segregated and transferred separately from non-asbestos wastes.
       10. No personnel shall be allowed to ride in the cargo compartment of any vehicle hauling asbestos-containing waste materials.
    5. Disposal at the Landfill
       1. Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos-containing waste.
       2. Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body, and foot protection, and at a minimum, half-face piece, air-purifying respirators equipped with high-efficiency filters.
       3. Bags, drums and components may be inspected, as they are off-loaded at the disposal site. Material in damaged containers shall be repacked in empty drums or bags as necessary.
       4. Waste containers shall be placed on the ground at the disposal site, not pushed, thrown or dumped out of trucks.
       5. Following the removal of all containerized waste, the truck cargo shall be decontaminated using HEPA vacuums or wet methods to meet the no visible residue criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing in bags or drums at the disposal site.
  1. RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS
     1. Re-establishment of the work area shall occur following the completion of cleanup procedures and after clearance air monitoring has been performed and documented per Contract Documents.
     2. Polyethylene barriers shall be removed from walls and floors at this time, maintaining decontamination enclosure systems and barriers over floors, windows, etc., as required.

Adjust reference to Work Area Clearance article in Item C below, if necessary.

* + 1. Refer to the Clearance procedures listed in Article 3.14 of this specification.
    2. Following satisfactory clearance of the work area, remaining polyethylene barriers may be removed and disposed of in accordance with these specifications.
    3. Re-secure mounted objects removed from their former positions during area preparation activities.
    4. Relocate objects that were removed to temporary locations back to their original positions.
    5. Re-establish HVAC, mechanical and electrical systems in proper working activities.
    6. Repair all areas of damage that occurred as a result of abatement activities.
    7. After all plastic barriers have been removed, the RM Project Monitor may collect another set of clearance samples in cases where debris has been discovered. These samples must indicate that the airborne fiber concentration is equal to or less than the pre-abatement levels or 0.01 f/cc, whichever is lower. If fiber levels are not met, remedial clean up shall be conducted by the Contractor at no additional cost to the Port.
    8. Comply with safety standards and governing regulations for cleaning operations. Remove waste materials from the site and dispose of in a lawful manner.
    9. Following this Section is an example of a "Certificate of Clearance". This certification is to be completed by the Contractor and RM Project Monitor during the clearance process.

1. MEASUREMENT AND PAYMENT
   1. PAYMENT

Choose “Schedule of Unit Prices” or “Lump Sum price bid for the Project” at the end of Paragraph A below.

* + 1. No separate measurement or payment will be made for the Work required by this section. The cost for this portion of the Work will be considered incidental to, and included in the payments made for the applicable bid items in the Schedule of Unit Prices or Lump Sum price bid for the Project.

End of Section

Revision History:

03/23/2015 Conversion to 2004 CSI Numbering System

**CERTIFICATE OF CLEARANCE**

**CONTRACTOR CERTIFICATION OF VISUAL INSPECTION**

Adjust reference to Work Area Clearance article in paragraph below, if necessary.

In accordance with Section 02 82 13, Article 3.14 “Work Area Clearance”, the Contractor’s supervisor/competent person hereby certifies that he/she has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris or residue.

Identity of Work Area:

By: (Signature of Supervisor/Competent Person)

Date:

(Print Name): Certificate Number:

(Print Title): Expiration Date:

**PORT OF SEATTLE CERTIFICATION OF VISUAL INSPECTION**

Adjust reference to Work Area Clearance article in paragraph below, if necessary.

In accordance with Section 02 82 13, Article 3.14 “Work Area Clearance”, the Port’s RM Project Designer, Monitor or Construction Manager hereby certifies that he/she has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Unit, sheet plastic, etc.) and has found no dust, debris or residue.

Identity of Work Area:

By: (Signature) Date: **Pass / Fail** (see punchlist)

(Print Name/Title)

Project Designer Certificate Number: Expiration Date:

**CONTRACTOR WORK AREA CLEARANCE CERTIFICATION**

The Contractor hereby certifies that he/she has conducted air clearance sampling (after encapsulation) according to the specifications, and this sampling is valid to the best of his/her knowledge and belief. Contractor must attach chain of custody and final laboratory results.

Identity of Work Area:

Air Sample Identification #: Flow Rate: Volume:

Air Sampling Results: Analyzed By: Time Sample Taken:

**PCS CONSTRUCTION MANAGER APPROVAL FOR RE-OCCUPANCY**

By: (Signature) Date:

(Print Name/Title)