ARM

Industrial & Environmental Consultants, LLC

Specification For

ASBESTOS ABATEMENT PROJECT

FOR

NORTH MUSKEGON PUBLIC SCHOOLS

AT

NORTH MUSKEGON HIGH SCHOOL & MIDDLE SCHOOL AND NORTH MUSKEGON ELEMENTARY SCHOOL
1600 Mills Avenue
North Muskegon, Michigan 49445

Specification # 0000245

Prepared By

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January 12, 2025

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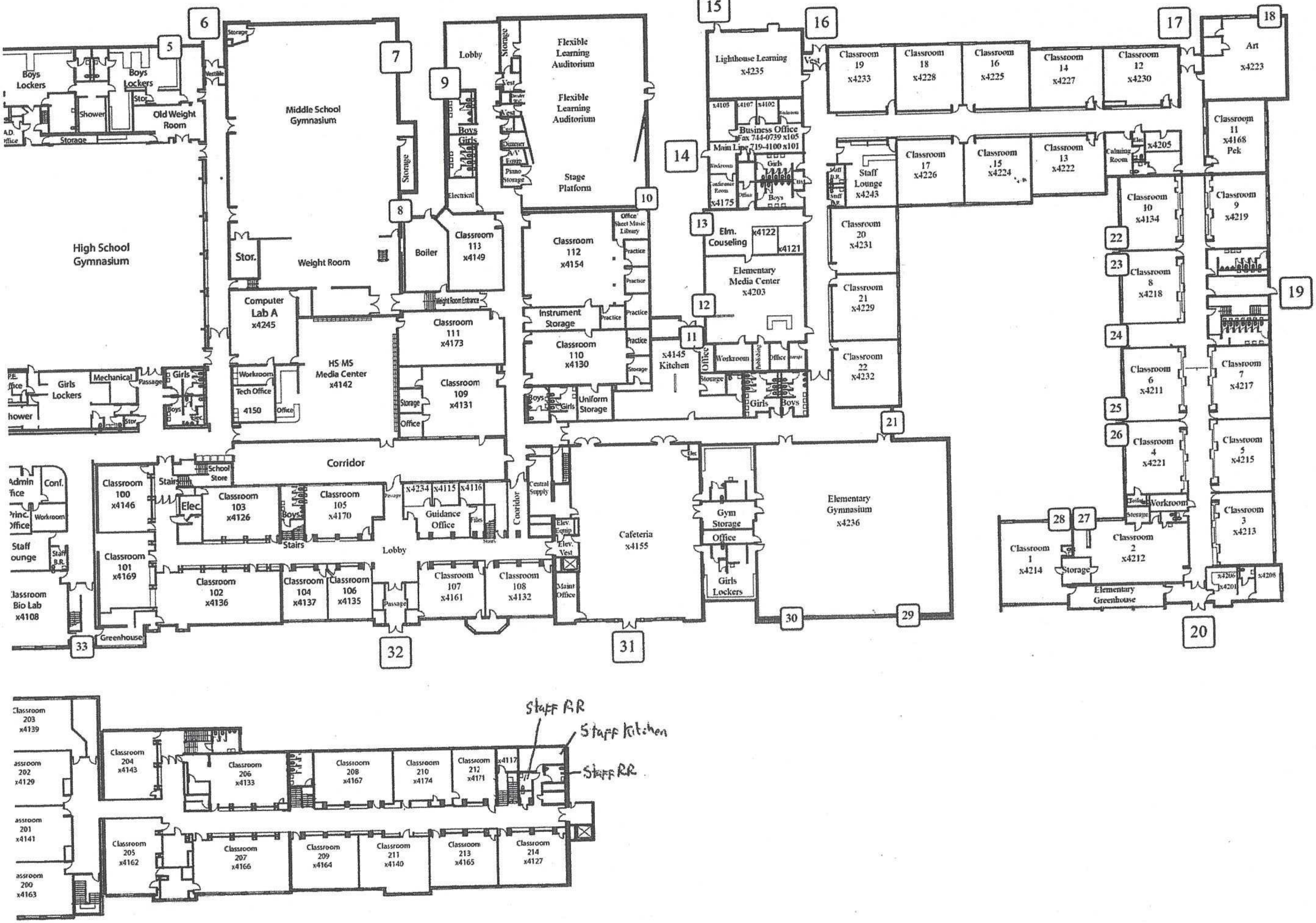
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ASBESTOS ABATEMENT SPECIFICATIONS

Specification # 0000245

INVITATION TO BID

North Muskegon Public Schools are soliciting bids for the removal of all asbestos containing materials as described in this Agreement. Bids shall cover all services, labor, materials, equipment, permits, fees, and insurance necessary to complete the project on time.

BID PROPOSAL (S)

Bid Number 0000245

The removal of all asbestos containing materials and non-asbestos materials as described in this agreement from the North Muskegon High School & Middle School and North Muskegon Elementary School. ***NOTE: PROJECT IS NOT A PREVAILING WAGE PROJECT.***

SUBMISSION OF BID PROPOSAL

North Muskegon Public Schools will be accepting sealed bids until **3:30 p.m., Monday, February 10, 2025** at North Muskegon Public Schools, located at 1600 Mills Avenue, North Muskegon, Michigan 49445. There will be a public bid opening and the awarding of the bid will be at the discretion of the Building Owner following post bid interviews from selected bidders and or Board approval. Bid proposals shall be on the bid forms furnished at the end of this agreement and addressed as follows:

North Muskegon Public Schools
Attn: Mark Mesbergen
1600 Mills Avenue
North Muskegon, Michigan 49445

Bid Number 0000245

North Muskegon Public Schools still reserves the right to reject any or all bids; to reject the Bid of a Bidder who is not, in the opinion of North Muskegon Public Schools, in a position to perform the contract; to waive informalities, irregularities and technicalities; to reject any and all nonconforming, nonresponsive, unbalanced [unreasonable unit price(s)] or conditional Bids; or to advertise for new Bids. North Muskegon Public Schools also reserves the right to award the Contract in the School's best interest, and therefore, may select a Bidder other than the lowest and or may modify the scope of work for reasons of schedule or economic advantage. The successful bidder will here-by be referred to as the Contractor in this document. North Muskegon Public Schools requests that bid prices be held firm for **90 days** or until the bid is awarded, whichever comes first.

QUESTIONS MAY BE ADDRESSED TO:

ARM Industrial & Environmental Consultants, LLC
18430 195th Ave., Suite C
Big Rapids, Michigan 49307
(231) 349-4926 (Cell)
e-mail: **armindenvcons@att.net**

Contact Person: ***Mr. James D. Armstrong***

PART 1 – GENERAL INFORMATION

1.1 Bidders Requirements

A. Site Investigation

1. By submitting a bid, the Contractor acknowledges that he/she has investigated and satisfied himself/herself as to:

a) The conditions affecting the work, including but not limited to physical conditions of the site which may bear upon site access, handling and the storage of tools and materials, access to water, electric or other utilities or otherwise affect performance of required activities.

b) The character and quantity of all surface and subsurface materials or obstacles to be encountered in so far as this information is reasonably ascertainable from a careful inspection of the site, including exploratory work completed by the Building Owner or a designated Consultant, as well as information presented in drawings and specifications included with this contract. Any failure by the Contractor to acquaint himself/herself with available information, materials, and conditions will not relieve him/her from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Building Owner is not responsible for any conclusions or interpretations made by the Contractor on the basis of information made available by the Building Owner. **"THIS EXCEPTION ESPECIALLY INCLUDES QUANTITIES AND AREAS LISTED/SHOWN IN PART 1 – GENERAL INFORMATION, SECTION 1.3 Scope of Work."**

2. Bidders are encouraged to and should attend the pre-bid meeting to be held at **3:30 p.m., Wednesday, January 29, 2025** at the North Muskegon High School & Middle School Building, located at 1600 Mills Avenue, North Muskegon, Michigan 49445. Attendance at this meeting by the Bidder or his/her qualified representative is ***not a mandatory prerequisite*** for the acceptance of a bid from that Contractor.

3. The Contractor is advised to take representative samples of the material for analysis to confirm types and percentages of asbestos and material composition. Abatement procedures and equipment will vary depending on material composition. This should be reflected in the bid proposals.

B. Discrepancies and/or Questions

1. Should a Bidder find discrepancies in the plans and/or specifications or should he/she be in doubt as to the meaning or intent of any part thereof, he/she must, no later than three (3) business days prior to the bid opening, request clarification from the Building owner. Discrepancies with regard to conflicts between the Contract documents and applicable Federal, State, or Local regulations or requirements shall be included in this caveat. Failure to request such clarifications is a waiver to any claim by the Bidder for expense made necessary by reason of later interpretation of the contract Documents by the Building Owner or Regulatory Agency.

2. Explanations desired by the prospective Contractor regarding specifications or other bid documents shall be requested IN WRITING so as to be received no later than five (5) days prior to commencement of removal activities. Requests shall include the contract number and name and shall be directed to ARM Industrial & Environmental Consultants, LLC, 18430 195th Ave., Suite C, Big Rapids, Michigan 49307. The email address for ARM is **armindenvcons@att.net**

3. Oral explanations or instruction will not be binding. Only written addenda are binding. Any addenda resulting from their requests will be emailed or faxed to all listed holders of the Bid Document no later than two (2) business days prior to bid opening. The Bidder shall acknowledge the receipt of all addenda.

C. Modifications and Withdrawal of Bids

1. Withdrawal or modifications to bids are effective only if written notice thereof is filed prior to time of bid opening and at the place specified in the Notice to Bidders. The Contractor or his/her designated representative must sign a notice of withdrawal or modifications to a bid.

2. No withdrawal or modifications shall be accepted after the time for opening of bid proposals.

D. Bid Bond and Performance Bond and Insurance

1. Bid Bond – Each Bidder must furnish a bid bond insured by a recognized surety company acceptable to the Building Owner with his/her proposal. The bond must be in an amount not less than five percent (5%) of the amount of the base bid. Other security may be acceptable as agreed to by the Building Owner.

2. Performance Bond – The successful bidder must furnish a performance bond insured by a recognized surety company within **five (5)** business days of being awarded the contract. The bond must be in an amount not less than ninety-five percent (95%) of the amount of the base bid. Other security may be acceptable as agreed to by the Building Owner.

3. Insurance Requirements – the Contractor shall purchase and maintain insurance throughout the duration of the project that will protect him/her from claims that may arise out of or result from his/her activities under this Contract, whether those activities are performed by the Contractor or by one of the Contractor's Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable. The Contractor shall protect, defend and indemnify the Owner, its officers, agents "including specifically, ARM, LLC", servants, volunteers, and employees from any and all liabilities, claims, liens, demands, and costs of whatsoever kind and nature which may result in injury or death to any persons, and for any result in injury or death to any persons, and or loss or damage to any property, including property owned or in the care, custody, or control of the Owner in connection with or in any way incident to or arising out of the occupancy, use, operations, or performance of work in connection with this Agreement resulting in whole or in part from negligent acts or omissions of the Contractor, any Subcontractor, or any employee, agent, or representative of the Contractor or any Subcontractor.

   a) Bidders shall submit proof of coverage under the Workman's Compensation Insurance System of the State of Michigan or other similar benefit acts.

   b) Bidders shall submit Proof of Asbestos Specific general liability insurance, specific for asbestos abatement, for personal injury, occupational disease and sickness or death and property damage. Insurance shall meet the following requirements and bidders shall provide insurance certificates for minimum insurance coverage as follows:

COMPREHENSIVE GENERAL LIABILITY

	EACH OCCURRENCE	**AGGREGATE**
Bodily Injury Liability	$ 500,000	$1,000,000
Property Damage	$ 500,000	$1,000,000
Or		
Bodily Injury & Property Damage Combined	$1,000,000	$1,000,000

(continued on next page)

AUTOMOBILE LIABILITY

Bodily Injury (Per Person)	$ 500,000
Bodily Injury (Per accident)	$1,000,000
Property Damage	$ 500,000
Or	
Bodily Injury & Combined Damage	$1,000,000

EXCESS LIABILITY

General Liability Coverage	$1,000,000	$1,000,000

WORKER'S COMPENSATION & EMPLOYERS' LIABILITY

Each Accident	$ 500,000
Disease-Policy Limit	$ 500,000
Disease-Each Employee	$ 500,000

E. Licenses and Qualifications

1. Bidders must be licensed as required by the State of Michigan for the purpose of removal, encapsulation, enclosure, demolition and maintenance of structures or components covered by or composed of asbestos-containing materials.

2. Bidders shall demonstrate prior experience on asbestos abatement projects of similar nature and scope through the submission of letters of reference from Building Owners including the names, address and telephone number of the contact persons specifically familiar with the Contractor's work, for at least three (3) previous users of service. Include descriptions of projects, locations, and records of all air monitoring data that were generated during the projects.

F. Rejection of Bids

1. The Building Owner reserves the right to reject bids for any reason that serves the best interests of the Building Owner or building occupants. The Building Owner also reserves the right to waive any technicality or irregularity in a bid. Failure to submit requested information/documentation or the submission of incorrect information/documentation would result in automatic disqualification of the bid package.

G. Worker Rights

1. The Contractor shall comply with the Michigan Civil rights Act which states that Contractors shall not discriminate in hiring or in its terms and conditions of employment of the basis of face, religion, creed, national origin, color, sex,

marital status, age, height or weight, nor on bona fide job requirements. Neither shall a Contractor discriminate in the sales of products or the rendering of services pursuant to this contract on the basis of any of those categories.

1.2 Definitions

Abatement – Procedures to control fiber release from asbestos containing materials. Includes removal, encapsulation, enclosures, repairs, demolition and renovation activities.

Accredited – Referring to a person means that such person is accredited in accordance with the revised Model Accreditation Plan of AHERA.

ACGIH – Formerly American Conference of Governmental Industrial Hygienists, Kemper Meadow Drive, Cincinnati, Ohio.

Adequately Wet – means sufficiently mix or penetrated with liquid to prevent the release of particulate. If visible emissions are observed coming from the ACM, than the material has not been adequately wetted. Absence of visible emissions is not sufficient evidence of being adequately wet, (NESHAPs)

Aggressive Method – means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles or disintegrates intact ACM. (OSHA)

Aggressive Sampling – Air sampling which takes place after final clean-up and utilizes a one horse electric leaf blower to physically agitate the air to produce a worst case situation.

AHERA – Asbestos Hazard Emergency Response Act.

AIHA – American Industrial Hygiene Association

Airlock – A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two side hinged doorways separated by the distance of at least 3 feet such that one passes through one doorway into the airlock, allowing the doorway to close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

Air Monitoring – The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Standard Analytical Method of Asbestos in Air Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower detectability and specific fiber identification.

Air Sampling Professional (ASP) – The professional contracted or employed by the Building Owner to supervise and/or conduct air monitoring and analysis schemes. This individual may also function as the Asbestos Project Consultant, if qualified. Supervision of air sampling and evaluation of results should be performed by an individual having specialized experience "and the requisite professional credentials" in air sampling for asbestos. This individual shall not be affiliated in any way other than through this contract with the Contractor performing the abatement work.

Amended Water – Water to which a surfactant has been added.

ANSI – American National Standards Institute.

Asbestos – Means the asbestiform varieties of serpentine (chrysotile), rie-beckite (crocidolite), cummingtyonite-grunerite (amosite, anthrophyllite, actinolite and tremolite.

Asbestos Containing Material (ACM) – Material composed of asbestos of any type and in a amount greater than 1% by weight, either alone or mixed with other fibrous or non-fibrous materials.

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

Asbestos Project Consultant – An individual qualified by virtue of accreditation, experience and education, designated by the Building Owner to oversee the asbestos abatement project as provided in these specifications.

Asbestos Standard – Reference to the OSHA requirements in the general industry standards regarding asbestos exposure (29 CFR 1910.1001 and 1926.1101) and EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) (40 CFR 61, subpart M).

ASTM – American Society for Testing and Materials.

Authorized Visitor – The Building Owner or any designated representatives, and any representative of a regulatory agency having jurisdiction over the project.

Bridging Encapsulant – The application of a sealant over the surface of ACM to prevent the release of asbestos fibers.

Building/Facility Owner – The Owner or his/her authorized representative.

Category I Nonfriable ACM – Packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos. (NESHAPs)

Category II Nonfriable ACM – Any material, excluding Category I, containing more than 1% asbestos. (NESHAPs)

Certified Industrial Hygienist (CIH) – An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Change Order – A change to contract documents after a contract has been signed.

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.

Class I Asbestos Work – means activities involving the removal of thermal system insulation (TSI) and surfacing ACM and PACM. (OSHA)

Class II Asbestos Work – means 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 Title and sheeting, roofing and siding shingles, and construction mastics. (OSHA)

Class III Asbestos Work – means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, may be disturbed. (OSHA)

Class IV Asbestos Work – means 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 form Class I, II, and III activities. (OSHA)

Competent Person – means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace, selection of the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 (f); in addition, for Class I and Class II work, who is specially trained in a training course which meets the criteria of the EPA's Model Accreditation Plan (40 CFR 763) for project designer or supervisor, or its equivalent and, for Class III and Class IV work, who is trained in an operations and maintenance (O & M) course developed by EPA [40 CFR 763.92 (a) (2)].

Completion – see Final Completion.

Contractor – The individual and/or business with which the Building Owner arranges to perform the asbestos abatement. If asbestos abatement is part of a larger project, and the asbestos work is subcontracted separately and distinctly from other contract work, the general Contractor is responsible for the proper

completion of asbestos project activities and will consequently need an accredited Contractor/Supervisor employee on-site during asbestos operations.

Critical Barrier – means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area. (OSHA)

Curtained Doorway – A device to allow ingress or egress from one room to another or for allowing container pass-out from containment while permitting minimal air movement between the room, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs are permissible.

Decontamination Enclosure System – A series of connected rooms, separated from the work area and from each other by airlocks, for the decontamination of workers and equipment.

Documentation, Documented – A written document, often a prepared form, that provides a dated record of an act, a test, a condition, an instrument reading, or like item and bearing the signature of an authorized witness to said item(s).

Encapsulant – A liquid material which can be applied to ACM which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

Encapsulation – The application of an encapsulant to ACM to control the release of asbestos fibers into the air.

Enclosure – The construction of an airtight, impermeable, permanent barrier around ACM to control the release of asbestos fibers into the air outside the enclosure.

EPA – U.S. Environmental Protection Agency

Equipment Decontamination Enclosure System – that portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.

Equipment Room – A contaminated area or room that is part of the worker decontamination enclosure system with provisions for storage of contaminated clothing and equipment.

Facility Component – Any pipe, duct, boiler, tank, reactor, turbine of furnace at or in a facility or any structural member of a facility.

Final Completion – means total project completion INCLUDING PUNCH LIST, of all building and site cleaning; restoration completed and approved.

Fixed Object – A piece of equipment or furniture in the work area which cannot be removed from the work area.

Friable Asbestos – ACM which can be crumbled to dust, when dry, under hand pressure.

Glove Bag Technique – A method with limited applications for removing small amounts of friable ACM from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contained (plasticized) work area. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6-mil transparent polyethylene or polyvinylchloide plastic), two inward projecting long sleeves, an internal tool pouch, and an attached labeled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed, uses negative air pressure and contains all asbestos fibers released during the process. All workers who are permitted to use the glove bag technique must be highly trained, experienced and skilled in this method.

HVAC – Heating, ventilation and air conditioning system.

HEPA Filter – A high efficiency particulate air filter capable of removing particles as small as 0.3 microns in diameter with 99.97% efficiency.

HEPA Vacuum – A vacuum system equipped with HEPA filtration.

Hinged Doorway – A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. All egress doors **must be** side-hinged, swinging type, and capable of swinging outward, in the direction of exit, to facilitate the emergency exit of workers.

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

Lockdown/Final Encapsulation – The procedure of applying a protective coating or sealant to a surface from which ACM has been removed.

Medical Surveillance – Periodically examining all employees working in Class I, II, and III for more than 30 days per year or who are exposed above the OSHA permissible exposure limit or who wear a negative pressure respirator during work.

Method 7400 – NIOSH sampling and analytical method for fibers using phase-contrast microscopy.

MIOSHA – Michigan Department of Public Health's Division of Occupational Health and Michigan Department of Labor's Construction Safety Division or as renamed in Michigan Government reorganization.

Movable Object – A piece of equipment or furniture in the work area, which can be removed from the work area.

Negative Pressure Respirators – Respirators that function by the wearer inhaling air through a filter or cartridge, thus causing a negative pressure inside the facepiece.

Negative Pressure Ventilation System – A portable exhaust system equipped with HEPA filtration and capable of maintaining a constant low velocity air flow into contaminated areas from adjacent uncontaminated areas.

NESHAPS – The National Emission Standards for Hazardous Air Pollutants 40 CFR Part 61.

NIOSH – The National Institute for Occupational Safety and Health.

OSHA – The U.S. Department of Labor's Occupational Safety and Health Administration.

Outside Air – The air outside buildings and structures.

PCM – Phase Contrast Microscopy. A method of analyzing air samples for fibers using a phase contrast microscope.

PEL – Permissible Exposure Limit. A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. It is 0.1 fibers per cubic centimeter of air, 8-hour time-weighted average, as measured by PCM.

Personal Sample – Any air sample taken with the sampling pump directly attached to the worker with the collecting filter placed in the worker's breathing zone.

Presumed Asbestos Containing Material (PACM) – means thermal system insulation and surfacing material found in building constructed no later than 1980.

Positive Pressure Respirators – Respirators which provide positive pressure in the facepiece.

Prior Experience – experience required of the Contractor on asbestos projects of similar nature and scope to insure capability of performing in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

Project Completion Date – Calendar date (or dates if a multi-phased contract) specified herein for absolutely meeting final completion requirements of this contract. Please see Final Completion.

RACM – Regulated ACM. Material considered to be RACM are friable ACM; Category I that has become friable; Category I possibly sanded, ground, cut or abraded; or category II with high probability of being crumbled, pulverized, or reduces to powder during demolition or renovation. (NESHAPs)

Regulated Area – means: an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.

Removal – The stripping of any ACM from surfaced or components of a facility.

Renovation – Altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Shower Room – A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold or warm running water controllable at the tap and suitably arranged for complete showering during decontamination.

Staging Area – Either the holding area or some area near the waste transfer airlock where containerized asbestos has been placed prior to removal from the work area.

Strip – To take off friable asbestos materials from any part of a facility.

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

Surfactant – A chemical wetting agent added to water to improve perpetration.

Target Completion Date – The date in the Contractor's scheduled that removal and cleanup is to be completed and which has allow for clearance sampling and

analysis, and if found necessary, re-cleaning, re-sampling, and re-analysis; where as to absolutely meet the owner's specified Project Completion Date.

TWA – time weighted Average.

UL – Underwriters Laboratories.

Visible Emissions – Any emissions containing particle asbestos materials that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Visual Inspection – A walk-through type inspection of the regulated area to detect incomplete work, damage, or inadequate clean up of an abatement worksite

Waste Generator – Any Owner or operator of a source covered by the NESHAPs regulation whose act or process produces asbestos containing waste.

Waste Shipment Record – Shipping document, originated and signed by the generator, used to track and substantiate the disposal of asbestos containing waste.

Waste Transfer Airlock – A decontamination system utilized for transferring containerized waste from inside to outside the work area.

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.

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. A contained work area is a work area, which has been sealed, plasticized, and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area, which had not been plasticized nor equipped with decontamination enclosure system.

Worker Decontamination Enclosure – A decontamination system consisting of a clean room, a shower room, and an equipment room separated from each other and from the work area by airlocks using hinged doorways or curtained doorways. This system is used for all worker events and exists in the work area and for equipment and waste pass out.

1.3 Scope of Work

A. This specification covers the abatement of exposure to asbestos hazards from building structures and components. It is the intent of the Contract Documents to

show all of the work necessary to complete the project. In spite of any minor omissions from said documents, the Contractor's bid is to include everything necessary to timely, workmanlike, and safely complete this abatement project and return the property for the owner's use according to these specifications.

B. The following is a list of all locations of Asbestos-Containing Materials (ACM) to be removed from the North Muskegon High School & Middle School and North Muskegon Elementary School ***Quantities listed are estimates only***. However by submitting a bid the Contractor signifies he/she has taken their own measurements and has submitted a price for removing the specified material without regard to the quantity stated herein.

North Muskegon High School & Middle School (Phase I)

Homogeneous Area Name	Location/ Est. Quantity
ARM 17T – 9" X 9" TAN FLOOR TILE W/ DARK BROWN & WHITE STREAKS (1946 Construction)	1. Boy's Athletic Director's Office Hallway [138 S.F.] 2. Girl's Coaches Office Closet [16 S.F.] **Total: 158 S.F.**
ARM 17M – MASTIC ASSOC. W/ 9" X 9" TAN FLOOR TILE W/ DARK BROWN & WHITE STREAKS (1946 Construction)	1. Boy's Athletic Director's Office Hallway [138 S.F.] 2. Girl's Coaches Office Closet [16 S.F.] **Total: 158 S.F.**
ARM 22 – 2' X 4' ROUGH TEXTURED DROP CEILING TILES (1946 Construction) ***<1% ACM Material*** **** All Gridwork assoc. with Drop Ceiling is to be removed.***	1. Boy's Locker Room [912 S.F.] 2. Boy's Locker Room Coaches Office [204 S.F.] **Total: 1,116 S.F.**
ARM 27 – YELLOW CERAMIC FLOOR TILES/CERAMIC TILE BASE (STYLE III) (1946 Construction) ***<1% ACM Material*** **** Ceramic Tile, Ceramic Tile Grout and Glue are to be removed.***	1. Boy's Locker Room Coaches Office [204 S.F.] **Total: 204 S.F.**

NOTE: Work area size and locations will be coordinated with the building owner or building owners representative.

North Muskegon High School & Middle School (Phase I)

Homogeneous Area Name	Location/ Est. Quantity
ARM 43 – FIRE DOORS/FIRE DOOR FRAMES (1946 Construction)	1. Boy's Locker Room (Old Weight Room) [1 Wood Fire Door/ Steel Fire Door Frame] 2. Boy's Locker Room (Old Weight Room) [2 Steel Fire Doors/Steel Fire Door Frames] 3. Girl's Locker Room Bathroom [1 Wood Fire Door/Steel Fire Door Frame 4. Girl's Locker Room Bathroom [1 Steel Fire Door/Steel Fire Door Frame **Total: 5 Fire Doors/5 Frames**
ARM 44 – UNKNOWN THERMAL SYSTEM INSULATION IN WALL CAVITIES (1946 Construction) ***Notify for 200 linrar feet (estimated) of TSI Removal.** *** Contractor will be paid based on unit price provided on page 2 of Bid Form for the amount of TSI removed.**	1. Boy's Locker Room Areas [Unknown] 2. Cirls Locker Room Areas [Unknown] **Total: Unknown**

NOTE: Work area size and locations will be coordinated with the building owner or building owners representative.

North Muskegon High School & Middle School (Phase II)

Homogeneous Area Name	Location/ Est. Quantity
ARM 07T – 1' X 1' OFF WHITE FLOOR TILE W/ WHITE & TAN DAUBS (1930 Construction)	1. 2nd Floor E/W Hallway [12 S.F.] **Total: 12 S.F.**
ARM 07 – BLACK MASTIC UNDER CARPETING (1941 Construction)	1. Room 204/204 Closet [672 S.F.] **Total: 672 S.F.**
ARM 11M – MASTIC ASSOC. W/ 1' X 1' WHITE FLOOR TILE W/ RED & GREEN DAUBS (1941 Construction)	1. Room 101 [807 S.F.] 2. Room 102 [1,406 S.F.] 3. Room 205/205 Closet [763 S.F.] 4. Room 207 [1,386 S.F.] **Total: 4,538 S.F.**
ARM 12T – 1' X 1' BLACK FLOOR TILE (1941 Construction)	1. Room 205/207 Prep Room [40 S.F.] **Total: 40 S.F.**
ARM 12M – MASTIC ASSOC. W/ 1' X 1' BLACK FLOOR TILE (1941 Construction)	1. Room 205/207 Prep Room [40 S.F.] **Total: 40 S.F.**
ARM 13T – 1' X 1' GREEN FLOOR TILE (1941 Construction)	1. Room 205/207 Prep Room [150 S.F.] **Total: 150 S.F.**
ARM 13M – MASTIC ASSOC. W/ 1' X 1' GREEN FLOOR TILE (1941 Construction)	1. Room 205/207 Prep Room [40 S.F.] **Total: 150 S.F.**

NOTE: Work area size and locations will be coordinated with the building owner or building owners representative.

North Muskegon High School & Middle School (Phase II)

Homogeneous Area Name	Location/ Est. Quantity
ARM 14T – UNKNOWN FLOOR TILE UNDER CARPETING (1941 Construction)	1. Room 206 Stage [120 S.F.] **Total: 120 S.F.**
ARM 14M – MASTIC ASSOC. W/ UNKNOWN FLOOR TILE UNDER CARPETING (1941 Construction)	1. Room 206 Stage [120 S.F.] **Total: 120 S.F.**

NOTE: Work area size and locations will be coordinated with the building owner or building owners representative.

North Muskegon Elementary School (Phase III)

Homogeneous Area Name	Location/ Est. Quantity
ARM 19T – 9" X 9" FLOOR TILE UNDER CARPET (1963 Construction) (C) Carpeted	1. Conference Room [880 S.F.] (C) 2. Conference Room Offices [220 S.F.] (C) 3. Conference Room Storage (N. Wall) [70 S.F.] (C) 4. Media Center [1,680] (C) 5. Media Center Side Rooms [372 S.F.] **Total: 3,222 S.F.**

1.4 Description of Work

A. The work specified herein shall be the removal of asbestos-containing materials from the North Muskegon High School & Middle School and North Muskegon Elementary School, by competent persons trained, knowledgeable and qualified in the techniques of abatement, handling and disposal of asbestos-containing materials and the subsequent cleaning of contaminated area, who comply with all applicable Federal, State, and Local regulations and are capable of and willing to perform the work of this Contract.

1' X 1' FLOOR TILE & 9" X 9" FLOOR TILE

1. Removal shall be, via wet methods, use of hand tools and HEPA vacuuming techniques.

2. Work Area will be a negative pressure enclosure with all critical barriers sealed off with two layers of 6 mil poly.

3. All light fixtures and fixtures that cannot be removed will be sealed with 2 layers of 4 mil poly.

4. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration will be utilized to produce sufficient negative air to control airborne fiber concentrations as a secondary engineering control.

5. A one-stage decontamination system will be located at the entrance to the work area.

6. Black Poly will be required in areas adjacent to occupied areas, particularly around the Decon Unit and along Corridors and or exterior of containment area.

9" X 9" FLOOR TILE/MASTIC/1' X 1' FLOOR TILE/MASTIC/UNKNOWN FLOOR TILE UNDER CARPETING/MASTIC/BLACK MASTIC UNDER CARPETING

(NEGATIVE PRESSURE FULL ENCLOSURE)

1. Removal shall be via full negative pressure enclosure, via hand tools, and or mechanical methods, utilizing wet methods and HEPA vacuuming techniques.

2. A three-stage decontamination system will be located at the entrance to the work area.

3. All light fixtures and fixtures that cannot be removed will be sealed with 2 layers of 4 mil poly.

4. Work Area will be a full negative pressure enclosure with all critical barriers sealed off with two layers of 6 mil poly and two layers of 4 mil poly on the walls.

5. Black Poly will be required in areas adjacent to occupied areas, particularly around the Decon Unit and along Corridors and or exterior of containment area.

6. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration to provide one workplace air exchange every 15 minutes, with a minimum of –0.02 column inches of water pressure differential, relative to outside pressure, which shall be maintained within the negative pressure

enclosure as evidenced by manometric measurement. **NOTE: The Contractor is responsible for providing proof of manometric measurements.**

FIRE DOORS/FIRE DOOR FRAMES

1. Removal shall be, via full whole structure removal, utilizing hand tools and wet methods.

2. Criticals shall be placed at all entrances to the work area.

3. AFD's will be required as a secondary engineering control.

4. Fire Doors/Fire Door Frames will be wrapped with 6 mil poly, and properly demarcated, prior to the removal from the work area.

5. Drop clothes of 6-mil poly will be utilized under all work areas.

6. Black Poly will be required in areas adjacent to occupied areas, particularly around the Decon Unit and along Corridors and or exterior of containment area.

THERMAL SYSTEM INSULATION

1. Removal shall be, via glove bag techniques and or whole structure removal.

2. All entrances to the work area will be sealed off by the use of critical barriers, utilizing two layers of 6-mil poly.

3. Drop clothes of 6-mil poly will be utilized under all work areas.

4. A three-stage decontamination system will be located on site as per MIOSHA Regulations.

5. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration will be utilized to produce sufficient negative air to control airborne fiber concentrations as a secondary engineering control.

6. Black Poly will be required in areas adjacent to occupied areas, particularly around the Decon Unit and along Corridors and or exterior of containment area.

2'X4' ROUGH TEXTURED DROP CEILING TILE.CERAMIC FLOOR TILE/CERAMIC FLOOR BASE (<1% ACM MATERIAL)

1. Removal shall be via negative pressure enclosure utilizing wet methods.

2. A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration will be utilized to produce sufficient negative air to control airborne fiber concentrations as a secondary engineering control.

3. All entrances to the work area will be sealed off by the use of critical barriers. utilizing one layer of 4-mil poly.

4. Drop clothes of 6-mil poly will be utilized under all work areas.

5. A one-stage decontamination system will be located at the entrance to the work area.

6. Black Poly will be required in areas adjacent to occupied areas, particularly around the Decon Unit and along Corridors and or exterior of containment area.

B. The Contractor shall supply all labor, materials, services, insurance, permits, fees, and equipment necessary to carry out the work in accordance with all applicable Federal, State, and Local regulations and these specifications.

C. The Contractor is responsible for restoring the work area(s) and auxiliary area(s) utilized during the abatement to conditions equal to or better than original. Any damage caused during the performance of abatement activities shall be repaired by the Contractor (e.g., paint peeled of by the barrier tape, nail holes, water damage, broken glass) at no additional expense to the Building Owner.

1.5 Applicable Standards and Guidelines

A. General requirements

1. All work under this contract shall be completed in strict accordance with all applicable Federal, State, and Local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement.

2. The most recent addition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be utilized.

3. Copies of all standards, regulations, codes and other applicable documents, including this specification and those listed in Section 1.5 shall be available at the worksite.

B. Specific requirements

1. Occupational Safety and Heath Administration (OSHA)

a) Title 29 Code of Federal Regulations Section 1926.1101 – Construction Standard for Asbestos.

b) Title 29 Code of Federal Regulations Section 1910.134 – General Industry Standard for Respiratory Protection.

c) Title 29 Code of Federal Regulations Section 1926 – Construction Industry.

d) Title 29 Code of Federal Regulation Section 1910.20 – "Access to Employee Exposure and Medical Records"

e) Title 29 Code of Federal Regulations Section 1910.1200 – "Hazard Communication"

f) Title 29 Code of Federal Regulations Section 1926.150 – Subpart F – Fire Protection and Prevention.

g) Title 29 Code of Federal Regulations Section 1910 – subpart E – Means of Egress.

2. Environmental Protection Agency (EPA)

a) Title 40 Code of Federal Regulations Part 61 Subpart A and M (Revised Subpart B) – National Emission Standard for Hazardous Air Pollutants – Asbestos.

b) Title 40 Code of Federal Regulations Part 763 Asbestos containing Materials in Schools, Final Rule and Notice.

1.6 Submittals and Notices

A. Contractor shall:

1. Prior to commencement of work

a) The Contractor shall obtain and pay for all permits, assessments, fees, bonds, and other charges as necessary to perform and complete the work of this contract, including connection charges and inspection fees.

b) Submit proof satisfactory to the Building Owner that required permits, site location and arrangements for transport and disposal of asbestos-containing waste materials have been made.

c) Should abatement projects involve greater than 260 linear feet of pipe insulation or 160 square feet of sprayed, troweled or otherwise applied material or covering or composing building structures or components, send written notification in accordance with 40 CFR Part 61.146 of Subpart M, to the appropriate state or Federal air pollution control agency responsible for the enforcement of the National Emission Standard for Asbestos at least ten (10)

days prior to the commencement of any on-site project activity. Provide the Building Owner with a copy of the notice, at the time of mailing.

d) Submit proof satisfactory to the Building Owner that required permits, site location and arrangements for transport and disposal of asbestos containing waste materials have been made. Obtain and submit a copy of handling procedures and list of protective equipment utilized for asbestos disposal at the Landfill, signed by the Landfill Owner.

e) Submit documentation satisfactory to the building Owner that the Contractor's employees, including foremen, supervisors and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received adequate training that includes, at a minimum, information in Part 4 of this document.

f) Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos in excess of background levels have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that personnel have received medical monitoring as required in OSHA 29 CFR 1926.1101 (m). **A written Medical Opinion must be presented for each person on site.** The Contractor must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g., high temperatures, humidity, chemical exposures) that may impact on the employee's health or ability to perform work activities.

g) When rental equipment is to be used in abatement areas or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the Building Owner.

h) Document NIOSH approvals for all respiratory protective devices utilized on site. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters. This may be obtained through the NIOSH "List of Certified Equipment", the manufacturer, or local MIOSHA office.

i) Submit documentation of respirator fit-testing that is in accordance with qualitative procedures as detailed in the OSHA Construction Standard for Asbestos 29 CFR 1926.1101 appendix C; Qualitative Fit Test Protocol or be quantitative in nature.

2. During Abatement Activities

a) Submit daily job progress reports detailing abatement activities. Include review of progress with respect to previously established mile-stones and schedules, major problems, action taken, injury report, and equipment breakdown.

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

c) Submit daily, copies of worksite entry logbooks with information on worker and visitor access.

d) Submit logs documenting filter(s) changed on respirators, HEPA vacuums, negative pressure ventilation units, and other engineering controls. The number and size of negative pressure units required for the project shall be based on maintaining the required negative pressures as measured on-site, rather than calculated from the manufacturer's rating(s).

e) Post at the job site a list containing the names, addresses, and telephone numbers of the Contractor, Building Owner, the Asbestos project Consultant, General Superintendent, Air Sampling Professional, Testing Laboratory and any other personnel who may be required to assist during abatement activities (e.g., Safety Officer, Building Maintenance Supervisor, Energy Conservation Officer). List emergency or after hours numbers as well as weekday office numbers.

B. Owner shall:

1. Prior to commencement of work:

a) Notify occupants of work areas that may be disrupted by the abatement, of project dates and requirements for relocation and limitation of access. Arrangements must be made prior to start, for relocation of desks, files, equipment and personal possessions and unauthorized access into the work area. NOTE: Notification of all building occupants and users is required by law and should eliminate temptation for unauthorized access to the contaminated work area(s).

b) Submit to the Contractor, results of pre-abatement air sampling if conducted; include location of samples, names of the Air Sampling Professional, equipment utilized and method of analysis.

c) Document that Building Owner's employees who will be required to enter the work area(s) during abatement have received training equal to that detailed in Part 4.

1.7 Site Security/Cleanliness

A. The work area is to be restricted to authorized, trained and protected personnel. These may include the Contractor's employees, employees of subcontractors, building owner employees and representatives, state and local inspectors, and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted at the work site.

B. The Contractor shall report attempted entry into the work area by unauthorized individuals immediately to the Building Owner/Representative.

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

D. Access to the work area shall be through a three-stage worker decontamination system located at the entrance to the work area. All other means of access (doors, windows, hallways, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out airlocks, which shall be sealed except during the removal of containerized asbestos waste from the work area and emergency exits or accident. Emergency exits shall <u>not</u> be locked from the inside, however, they shall be sealed with polyethylene sheeting and taped until needed. Emergency Exit Signs must be on the worker side of this polyethylene sheeting.

E. The Contractor shall have control of site security during abatement operations. As well as protecting his/her equipment, this is necessary to prevent unintended asbestos damage, removal, or track out.

F. The Contractor will have Building Owner's assistance in planning and implementing E. above and in notifying building occupants of impending activity and enforcement of restricted access by Building Owner's employees.

G. The Contractor shall designate one worker to remain outside each enclosure throughout the duration of the project in order to regulate ingress and egress to the work area(s) as well as needed supplies and equipment. The worker outside the enclosure will be within hearing range at all times. At least one person, at all times, inside the enclosure must have had "Competent Person" training.

H. All areas occupied or used in any way by the Contractor (all employees), outside the enclosure(s) but within the building shall be kept in a neat and uncluttered condition and thoroughly cleaned at the end of each day, to the satisfaction of the Owner's Consultant. If at any time, food containers or debris is found not properly disposed of, eating on the premises shall be terminated.

I. The Contractor is responsible for maintaining areas outside the building in a condition acceptable to the Owner or the Owner's consultant. This includes but is

not limited to sanitation, storage of supplies, equipment, and vehicles; and employee driving and substance abuse.

1.8 Emergency Planning

A. Emergency planning shall be developed prior to abatement initiation and agreed to by the Contractor and the Building Owner. Paragraph F below contains an instruction for this planning.

B. Emergency procedures shall be in written form and prominently posted inside and outside of the regulated area. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

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

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

E. 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 workplace to obtain proper medical treatment.

2. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him/her from the workplace, and secure proper medical treatment.

F. Telephone numbers of all emergency response personnel shall be prominently posted in the work area(s) along with the location of the nearest telephone. Emergency planning described in paragraph A above will specifically consider if an existing building telephone is appropriately located and accessible to serve as the emergency telephone.

1.9 Pre-Start Meeting

A. The successful Bidder shall attend a pre-start job meeting before any abatement activities commence; this meeting will coincide with the start-up date. Attending this meeting will be the authorized representative of the Building Owner for this

Asbestos Abatement Project, Asbestos Project Consultant, Air Sampling Professional who will conduct the Building Owner's testing/monitoring program.

B. The Contractor and his/her Competent Person who will provide on-site direction of the abatement activities must attend.

C. At this meeting the Contractor shall provide all submittals as required in Section 1.6 and in addition, he/she shall be prepared to provide detailed information concerning:

1. Preparation of work area including enclosure(s) construction.
2. Personal protective equipment including respiratory protection and protective clothing.
3. Employees who will participate in the project, including a summary of experience, training, and assigned responsibilities during the project.
4. Decontamination procedures for personnel, work area, and equipment.
5. Abatement methods and procedures to be utilized.
6. Procedures for handling and disposing of waste materials.
7. Procedures for final decontamination and cleanup.
8. Sequence of work and completion schedule.
9. Procedures for dealing with heat stress.
10. Emergency procedures.

D. Air Sampling Professional will provide testing/monitoring details.

1.10 Work/conduct Requirements

A. A "Competent Person" as defined in 29 CFR 1926.1101 must be on-site at all times throughout the duration of the project(s).

B. The Owner's consultant is not the Contractor's out-man. The Contractor must provide one out-man (competent person) for each enclosure (unless the decontamination chambers are within "talking" distance of each other). The out-man must always remain within talking distance of the enclosure they are assigned.

C. A foreman with competent-person credentials must remain within the enclosure at all times during the project.

D. Contractor's employees are subject to immediate dismissal if any of the following, but not limited there to, occurs:

1. Not following proper abatement procedures, including but not limited to improper use and care of respiratory protection and the throwing of asbestos disposal bags outside of the enclosure.

2. Physical threats and violence to the Owner's Consultant or any other person.

3. Property damage or theft.

4. Reckless driving on Owner's property.

5. Discourteous and ill-mannered statements made to the Owner, Owner's employees or Owner's Consultant.

6. Consumption or being under the influence of alcohol or illegal drugs on the Owner's premises.

1.11 Stop Work Orders

A. If at any time, the Owner or the Owner's Representative decides that work practices are in violation of the contract specifications or endangering workers or clean areas he/she will immediately notify the Contractor's on-site Representative of such and operations are to cease until corrective action is taken if work must be stopped to make corrections.

B. The Asbestos project Consultant shall report to the Owner in writing and without delay all but trivial and immediately corrected, deficiencies and/or potential safety/health problems.

C. The Contractor shall respond without delay to such deficiency/hazard notice and cooperate with the Owner and Owner's Consultant for the purpose of correction and promptly resuming acceptable and safe work.

1.12 Time Schedule

A. The awarded Contractor shall adhere to the following time schedule. This schedule is part of the contract documents and will be strictly enforced by the Building Owner. The Building Owner prior to the commencement of the project must approve any and all variances to this schedule in writing. If the project is not completed within the time period outlined below, the Building Owner may impose liquidated damages as described below.

1. Project Schedule

North Muskegon High School & Middle School (Phase I)

a) The project must commence on **Monday, April 7, 2025** and will be referred to as the start date. Work area size and locations will be coordinated with the Construction Manager, and or building owner or building owners representative.

b) The project must be completed on or before **Tuesday, April 15, 2025** and will be referred to as the ***PROJECT COMPLETION DATE.*** The project will be considered complete for schedule purposes when the project site has passed required clearance testing, the Contractor has completed removal of all supplies and equipment, and the Contractor has returned the building and outside premises over to the Building Owners in a condition that satisfies the project contract. This includes removal of all asbestos waste containers, Contractor property and vehicles.

c) The Contractor will be allowed to conduct abatement activities (including set-up, abatement, cleaning and tear down) from **April 7, 2025 to April 15, 2025.**

d) This project is a 1st shift project, which calls for four (4) or five (5) day workweeks with ten (10) hour workdays (7:00 a.m. to 5:30 p.m.).

North Muskegon High School & Middle School (Phase II)

a) The project must commence on Tuesday, **June 10, 2025** and will be referred to as the start date. Work area size and locations will be coordinated with the Construction Manager, and or building owner or building owners representative.

b) The project must be completed on or before **Friday, June 20, 2025** and will be referred to as the ***PROJECT COMPLETION DATE.*** The project will be considered complete for schedule purposes when the project site has passed required clearance testing, the Contractor has completed removal of all supplies and equipment, and the Contractor has returned the building and outside premises over to the Building Owners in a condition that satisfies the project contract. This includes removal of all asbestos waste containers, Contractor property and vehicles.

North Muskegon Elementary School (Phase III)

c) The project must **commence at the conclusion of Phase II** work and will be referred to as the start date. Work area size and locations will be coordinated with the Construction Manager, and or building owner or building owners representative.

d) The project must be **completed within 7 business days from the start date** and will be referred to as the ***PROJECT COMPLETION DATE.*** The project will be considered complete for schedule purposes when the project site has passed required clearance testing, the Contractor has completed removal of all supplies and equipment, and the Contractor has returned the building and outside premises over to the Building Owners in a condition that satisfies the project contract. This includes removal of all asbestos waste containers, Contractor property and vehicles.

2. Liquidated Damages

a) Liquidated damages will be incurred by the Contractor if the project is not completed by the above completion date. The Contractor will also incur liquidated damages if the post abatement air samples do not pass the required levels set forth by this contract. **NOTE: The Contractor should set his/her target completion date sufficiently in advance of the PROJECT COMPLETION DATE to allow time for re-cleaning should the first clearance test fail.**

b) If the Contractor fails to complete the project as outlined in this contract by the above completion date, said Contractor will be assessed liquidated damages in the amount of **$500.00** per day that the project extends beyond the completion date. The Contractor shall also be solely responsible for all additional costs incurred by the Building Owner, if the post abatement air samples do not pass the required levels set fourth by this contract. These additional costs, which may be incurred, include but are not limited to additional charges for the ASP and any and all additional sampling costs. Said liquidated damages and additional charges may be deducted from the contract price.

PART 2 – MATERIALS AND EQUIPMENT

2.1 Materials

A. General

1. Where applicable deliver all materials in the original packages, containers or bundles bearing the name of manufacturer and the brand name.

2. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the work area until abatement is completed.

3. Damaged, deteriorated 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 4-mil thick. For floors and all other uses, polyethylene sheeting of at least 6-mil thickness shall be used in widths selected to minimize the frequency of joints.

5. Method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and Building Owner and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws or other effective procedures capable of sealing adjacent sheets of

polyethylene (fire resistant if specified) and capable of sealing polyethylene (fire resistant if specified) to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).

6. Polyethylene sheeting utilized for worker decontamination enclosure shall be opaque white or black in color.

7. Disposal bags shall be 6-mil polyethylene, preprinted with labels as required by OSHA regulation: 29 CFR 1926.1101.

8. Disposal drums shall be metal or fiberboard with locking ring tops.

9. Stick-on labels as per OSHA requirements.

10. Warning signs as required by OSHA 29 CFR 1926.1101.

B. Removal

1. Water will be the wetting agent during removal activities. Where work area temperature may cause freezing of the amended water solution, the addition of ethylene glycol in amounts sufficient to prevent freezing is permitted.

2. Encapsulating agent to be applied to surfaces from which asbestos-containing material has been stripped must be tested for adhesion if new material is to be applied to the encapsulated substrate. Some manufacturers of replacement materials will not provide a material warranty on products applied over painted, encapsulated or otherwise coated surfaces. Without proper testing, the material may "fail" and require replacement at the Contractor's expense.

3. Replacement spray or trowel-applied fire proofing must be UL labeled and listed, asbestos-free [mineral/fiber] [cementitious] material to provide the degree of fire protection as required by applicable building codes.

4. Replacement spray or trowel-applied thermal insulation and acoustical material shall be asbestos-free and provide performance characteristics equal to or better than the original material, and should be evaluated and selected by the Building Owner prior to abatement.

C. Encapsulation

1. Encapsulation materials shall be bridging type and conform with the following characteristics:

a) Encapsulation materials shall be Lock-down type.

b) Encapsulants should not be solvent-based or utilize a vehicle (the liquid in which the solid parts of the encapsulant are suspended) consisting of hydrocarbons.

c) Encapsulants shall not be flammable.

D. Enclosure

1. Enclosure materials shall conform with the following characteristics:

a) The enclosures shall be constructed of materials such that then the enclosure is completed there is limited potential for impact damage to the enclosure and no potential for fiber release.

b) Enclosure plans and details will be submitted to the Asbestos Project Consultant for approval no later than the pre start meeting.

2.2 Equipment

A. 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 workplace air exchange every 15 minutes, with a minimum of –0.02 column inches of water pressure differential, relative to outside pressure, which shall be maintained within the negative pressure enclosure as evidenced by manometric measurement.

NOTE: The Contractor is responsible for providing proof of manometric measurements and such proof records shall be included in project documents turned over to the Owner upon final completion.

To calculate total air flow requirements:

$$\text{Total ft}^3\text{/min} = \frac{\text{Vol. of work area (in ft}^3\text{)}}{\text{15 min}}$$

To calculate the number of units needed for abatement:

$$\text{Number of units needed} = \frac{\text{(Total ft}^3\text{/min)}}{\text{Capacity of unit in ft}^3\text{/min}}$$

For small enclosures and glovebags, a HEPA filtered vacuum system may be utilized to provide negative air pressure.

2. Powered air purifying respirators (PAPR) are equipped with HEPA filters and have full facepieces. A sufficient supply of charged replacement batteries and filters and a flow test meter shall be available in the clean change area for use with powered air purifying respirators. Air purifying respirators with dual high-efficiency (HEPA) filters and full-face of half-face negative pressure respirators are recommended for use during work area preparation activities. Spectacle kits and eyeglasses must be provided for employees who wear glassed and who must wear full facepiece respirators. Respirators and filters shall be provided that have been tested and approved by the NIOSH for use in asbestos containing atmospheres. An adequate supply of respirators and HEPA cartridges must be on-site and available for workers, regardless of respirator type.

3. Full body disposable protective clothing, including head, body and foot coverings consisting of material impenetrable by asbestos fibers (Tyvek® or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

4. Additional safety equipment (e.g., hard hats meeting the requirements of ANSI Standard Z87.1-1981, eye protection meeting the requirements of ANSI Standard Z87.117979, 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.

5. Non-skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

6. A sufficient supply of disposable mops, rags and sponges for work area decontamination shall be available.

B. Removal

1. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g., scrapers, wire cutters, brushes, utility knifes, wire saws) shall be provided as needed.

2. Airless sprayers with pumps capable of providing 500 pounds per square inch (psi) at the nozzle tip at a flow rate of 2 gallons per minute for spraying amended water.

3. Rubber dustpans and rubber squeegees shall be provided for cleanup.

4. A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.

C. Encapsulation

1. Encapsulants shall be sprayed using airless spray equipment. Nozzle pressure should be adjustable within the 400 to 1500 psi range. [Nozzle pressure and tip size shall be specified based on manufacturer's recommendations.]
2. Additional support equipment as needed.

3. The nature of the encapsulant may effect 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.

D. Enclosures

1. The Contractor may use whatever tools are deemed necessary to install enclosure supports and enclosures. 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 an alternative, asbestos material may be partially removed following proper removal procedures prior to the installation of supports and enclosures.

2. Additional support equipment as needed.

2.3 Substitutions

A. Approval required:

1. The Contract is based on the materials, equipment and methods described in the Contract Documents.

2. The Building Owner will not consider proposals for substitutions of materials, equipment and methods prior to bid opening and then only when such proposals are accompanied by full and complete technical data and all other information required by the Building Owner to evaluate the proposed substitution.

3. Substitute materials, equipment or methods must not be used unless such substitution has been specifically approved in writing for this work by the Building Owner.

B. "Or equal"

1. Where the phrase "or equal" or "as approved by the Building Owner" occurs in the Contract Document, do not assume that materials, equipment or methods will be approved by the Building Owner unless the item and its data and specifications have been specifically directed to the Owner's attention and approved for this work by the Building Owner.

2. The decision of the Building Owner concerning material approvals and or substitutions shall be final.

C. Separate substitute bids:

1. Bidders may, if they wish, submit completely separate bids using materials and methods other than those described in the Contract Documents, provided that all substitutions are clearly identified and described, and that the bid in all other respects is in accordance with the provisions of the Contract Documents.

D. Availability of specified items:

1. Verify prior to bidding that all specified items will be available in time for installation during orderly and timely progress of the work as required by the project schedule and completion date.

2. In the event that specified items will not be so available, notify the Building Owner prior to receipt of bids.

3. Cost of delays because of non-availability of specified items, when the Contractor could have avoided such delays will be back-charged as necessary and shall not be borne by the Building Owner.

PART 3 – EXECUTION

NOTE: Nothing in this part shall be construed to prohibit a better type of building construction, more exits, or otherwise safer conditions than the minimum requirements specified in this part.

3.1 Preparation

A. Work area Pre-cleaning and Preparation

1. Post caution signs meeting the specification of OSHA 29 CFR 1926.1101 at any location and approach to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area 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 workplace enclosure barriers.

2. Shut down and lock out electric power to all work areas. Provide temporary power and lighting. Insure safe installation (including ground faulting) to temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirement for temporary electrical systems. All cost for electric power shall be paid by the Building Owner.

3. Shut down and lock out of heating, cooling, and air conditioning system (HVAC) components that are in, supply or pass through the work area. Investigate the work area and agree on pre-abatement condition with the Building Owner. Seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene. Also, seal any seams in system components that pass through the work area. Removal all HVAC system filters that may be in the work area and place then in labeled 6-mil polyethylene bags for eventual disposal as asbestos contaminated waste.

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

5. The Building Owner will provide water for contract purposes. The Contractor shall consult the Owner's representative before connection to the building water system.

6. Pre-clean all movable objects within the work area using a HEPA filtered vacuum and or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in an uncontaminated location. Carpeting, drapery, clothing, upholstered furniture and other fabric items may be disposed of as asbestos contaminated waste or cleaned as asbestos contaminated items utilizing HEPA vacuum techniques and off-premises steam cleaning.

7. Pre-clean all fixed objects in the work area using HEPA filtered vacuums and or wet cleaning techniques as appropriate. Careful attention must be paid to areas behind machinery, grills or gratings where access may be difficult but contamination significant. Also, pay particular attention to wall, floor and ceiling penetration behind fixed items. After pre-cleaning, enclosed fixed objects in 4-mil polyethylene sheeting and seal securely in place with tape. Objects that require special ventilation or enclosure requirements will be designated along with specified means of protection. Control panels, gauges etc., in the work area may require Building Owner access during abatement. These shall be designated and enclosures constructed with access flaps sealed with waterproof tape.

8. Pre-clean all surfaces in the work area using HEPA filtered vacuums and or wet methods as appropriate. Do not use any 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.

9. Seal off all windows, doorways, corridor entrances, drains, ducts, grills, grates, diffusers, skylights and any other openings between the work area and uncontaminated areas outside of the work area (including the outside of the building, tunnels and crawl spaces with 4-mill polyethylene sheeting and tape.

10. Cover floors in the work area with 6-mil polyethylene sheeting.

a) The floor shall be covered with two layers of 6-mil (minimum) sheeting. Carpeting, hardwood flooring and Title floors may be damaged by leaks of water, ladder feet, scaffold wheels, etc. Additional layers of protection such as plywood, canvas drop cloths or extra plastic sheeting may be required to protect flooring. Additional layers of impermeable sheeting will be utilized as drop cloths and placed on surfaces beneath all removal activities.

b) 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 the flooring material. **DO NOT** locate any seams at wall floor joints.

c) Floor sheeting shall extend up the sidewalls in the work area at least twelve (12) inches.

d) Sheeting shall be installed in a fashion so as to prevent any damage between successive layers of material. (Vinyl sheeting may be used for improved traction of floors.)

11. Cover walls in the work area with 4-mil polyethylene sheeting. Walls that are non-porous and will not be damaged by water, surfactant, encapsulant do not necessarily need protection. They can be decontaminated using HEPA vacuums and wet cleaning techniques. Walls with mortar joints (e.g., Title) are considered porous. In addition, openings through these walls to uncontaminated areas of he building must be sealed.

a) Walls shall be covered with two layers of 4-mil polyethylene sheeting.

b) Plastic shall be sized to minimize seams. Seams shall be staggered and separated.

c) Wall sheeting shall overlap floor sheeting beyond the wall/floor joints to provide a better seal against water damage and for negative pressure.

d) 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.

B. Worker Decontamination Enclosure Systems

1. Worker decontamination enclosure systems shall be provided at all locations where workers will enter or exit the work area. One system at a single location for each contained work area. These systems may consist of existing rooms outside of the work area, if the layout is appropriate, that can be enclosed in

plastic sheeting and are accessible from the work area. When this situation does not exist, enclosure systems may be constructed out of metal, wood or plastic support as appropriate.

2. Plans for construction, including materials and layout, shall be approved by the Building Owner's Representative prior to work initiation and submitted no later than the pre-start meeting. Worker decontamination enclosure systems constructed at the worksite shall utilize 6-mil opaque white or black polyethylene sheeting or other acceptable materials for privacy. Detailed descriptions or portable, prefabricated units, if used, must be submitted for the Building Owner's approval. Plans must include floor plan with dimensions, materials, size, thickness, plumbing, electrical utilities, and method and materials of attachment to the work enclosure.

3. The worker decontamination enclosure system shall consist of at least a clean room, a shower room, and an equipment room, each separated from each other.

4. Entry to and exit from the decontamination enclosure system chambers shall be through curtained doorways that open in the direction of exit. All egress curtained doorways must be swinging type and capable of swinging outward, (in the direction of exit), to facilitate the emergency exit of workers. Exit doorways shall in no case be less than 28 inches in width. Doorway designs, providing equivalent protection and acceptable to the Building Owner may be utilized.

5. Pathways into (from clean areas to contaminated areas) and out of (from contaminated areas to clean areas) the work area shall be clearly designated.

6. Clean room shall be sized to adequately accommodate the work crew. Lockers may be provided for valuables; however, workers may be requested to secure valuables in their cars. 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 in the clean room. A location for postings shall also be provided in an area adjacent to the clean room in a non-contaminated area. Lighting, heat and electricity shall be provided as necessary for comfort. This space shall not be used for storage of tools, equipment or materials, (except as specifically designated) or as office space.

7. Shower room shall contain one or more showers as necessary to adequately accommodate workers. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. An adequate supply of soap, shampoo and towels shall be supplied by the Contractor and available at all times. Shower shall be drained, collected and filtered through a system with at least 1.0 micron particle size collection capability. NOTE: a system containing a series of several filters with progressively smaller pore sizes is recommended to avoid rapid clogging of filtration system by large particles.

8. The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA filtered vacuum and or wet cleaning techniques as appropriate. Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement may also be stored here as needed. A walk-off pan (a small children's swimming pool or equivalent) filled with water may be located in the work area just outside the equipment room for workers to clean off foot coverings after leaving the work area will help prevent excessive contamination of the worker decontamination enclosure system. A drum lined with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be located in this room. Contaminated footwear shall be stored in this area for reuse the following workday.

C. Waste container Pass-out.

1. Plans for Waste Pass-out and Emergency Exits shall be submitted for approval no later than the pre-start meeting.

2. Whenever possible the waste container pass-out shall be constructed at some location away from the worker decontamination enclosure system. Wherever possible, this shall be constructed in similar fashion to the worker decontamination enclosure system using similar materials air lock. NOTE: Curtained doorway may be used for container pass-out.

3. This system **SHALL NOT** be used to enter or exit the worksite.

D. Barriers between Work Area(s) and Occupied Area(s). NOTE: Building Owner will clearly identify all areas that will be occupied.

1. The contaminated work area shall be separated from uncontaminated areas (occupied or not) of the building by the construction of airtight barriers.

2. Walls shall be constructed of wood or metal framing to support barriers.

E. Maintenance of Workplace Barriers and Worker Decontamination Enclosure Systems.

1. Following completion of the construction of all polyethylene barriers and decontamination system enclosures, allow overnight settling to insure that barriers will remain intact and secured to walls and fixtures before beginning actual abatement activities.

2. All polyethylene barriers inside the workplace, in the worker decontamination enclosure system, in the waste container pass-out airlock and at partitions constructed to isolate the work area from occupied (non-work areas) areas shall

be inspected at least twice daily, prior to the start of each day's abatement activities and following the completion of the day's abatement activities. Document inspections and observations in the daily (project) log.

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

4. Use smoke tubes to test the effectiveness of the barrier system when directed by the Building Owner or Asbestos Project Consultant.

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

6. If air samples collected outside of the work area during abatement activities indicate airborne fiber concentrations greater than pre-measured background levels or 0.01 f/cc if background levels are not obtainable, work shall immediately stop for inspection and repair of barriers. Cleanup of surfaces outside of the work area using HEPA vacuums or wet cleaning techniques may be necessary.

7. Install and initiate operation of negative pressure ventilation equipment as needed to provide one air exchange in the work area every 15 minutes. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and or caulking as needed. 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 ventilation units. Negative pressure ventilation units shall be exhausted to the outside of the building whenever feasible. They shall NOT be exhausted into occupied areas of the building. Twelve-inch extension ducting shall be used to reach from the work area to the outside when required. Air monitoring and daily inspections shall be done to insure that the ducting does not release fibers into uncontaminated building areas.

F. Testing Enclosures

1. 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.

G. Establishing Emergency Exits

1. Contractor will meet the specifications of 29 CFR 1910 subpart E – Means of Egress.

2. Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the work area. They shall be secured to prevent access from uncontaminated areas and still 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 enclosure, the waste pass-out and or other alternative exits satisfactory to fire officials.

3. The minimum width of any way of exit access shall be 28 inches.

H. Fire Protection and Prevention

1. The Contractor shall meet the specifications of 29 CFR 1926.150 subpart F – fire Protection and Prevention.

2. The general requirements are, but are not limited to, the following:

a) The Contractor shall be responsible for the development of a fire protection program to be followed throughout all phases of the project and he/she shall provide for the fire fighting equipment as specified in 29 CFR 1926 Subpart F – fire Protection and Prevention. As fire hazards may occur at any time, there shall be no delay in providing the necessary equipment.

b) A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of protected building area or major fraction thereof. Travel distance from any point of the protected area to the nearest extinguisher shall not exceed 100 feet. Substitution of the fire extinguisher with a ½ inch garden hose not exceeding 100 feet in length is acceptable.

c) Fire alarm devices, (e.g., telephone system, siren, etc.), shall be established by the Contractor to alert employees on the site and call the local fire department for an emergency.

I. Removing Fixtures from the Area

1. 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.

J. Commencement of Work Shall Not Occur Until:

1. Enclosure systems have been constructed and leak tested.

2. Negative pressure ventilation systems are functioning adequately.

3. All pre-abatement submissions, notifications, postings, and permits have been provided and are satisfactory to the Building Owner.

4. All equipment for abatement, cleanup and disposal are on site.

5. All worker training and certification is completed.

6. Contractor receives written permission from Building Owner to commence abatement.

K. Alternative Procedures

1. Procedures described in this specification are to be utilized at all times.

2. If specified procedures cannot be utilized, a request must be made in writing to the Building Owner providing details of the problem encountered and recommended alternatives.

3. Alternative procedures shall provide workers and public and structure no less protection against present and future asbestos exposure than procedures that they replace.

4. The Building Owner prior to implementation must approve any alternative procedure in writing.

3.2 Workplace Entry and Exit Procedures

A. Personnel Entry and Exit

1. All workers and authorized personnel shall enter the work area through the worker decontamination enclosure system.

2. All personnel who enter the work area must sign the entry log, located at the entrance to the clean room, upon entry and exit.

3. Before entering the work area all personnel shall read and be familiar with all posted relations, personnel protection requirements, including workplace 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. All personnel shall proceed first to the clean room, remove all street clothes and appropriately don respiratory protection of the type specifically required for the job conditions and disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be utilized if required. Clean

respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

5. Personnel shall proceed from the clean room through the shower room and equipment room to the main work area ONLY AFTER ALL REQUIRED PERSONAL PROTECTION IS PROPERLY AND COMPLETELY DONNED.

6. Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by HEPA vacuums and or wet wiping procedures. (Small HEPA vacuums with brush attachments should be utilized for this purpose, because larger machines may tear the suits.) each person shall clean bottoms of protective footwear prior to entering the equipment room.

7. Personnel shall proceed to equipment room where they removal all protective equipment except respirators. Deposit disposable clothing in appropriately labeled containers for disposal.

8. Reusable, difficult to clean (leather, canvas, etc.) contaminated footwear shall be stored in the equipment room when not in use in the work area. Upon completion of abatement it shall be disposed of as asbestos contaminated waste. Rubber boots may be decontaminated at the completion of the abatement for reuse.

9. Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator and shower and shampoo to remove residual asbestos contamination. Various types of respirators will require slight modification of these procedures. 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 filter respirator may be worn into the shower. Filters may have to be replaced for each new entry into the work area.

10. After showering and drying off, proceed to the clean room and don your clean street clothing. Re-entry to the work area will require that the aforementioned procedures be followed again.

B. Waste Container Pass-out Procedures

1. Asbestos contaminated waste that has been containerized shall be transported out of the work area through the waste container pass-out (or through the worker decontamination enclosure if a separate pass-out has not been constructed).

2. Waste pass-out procedures 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 work area shall clean the outside, including bottoms, of properly labeled containers (bags, drums, or wrapped components) using HEPA vacuums and wet wiping techniques and transport them into the waste container pass-out. No worker from the inside team shall further exit the work area through this pass-out.

4. The outside team, wearing a different color protective clothing and appropriately assigned respirators, shall enter FROM OUTSIDE THE WORK AREA, enclosed the bags, drums, or wrapped components in clean, labeled, 6-mil polyethylene bags and remove them to the outside. No worker from the outside team shall further enter the work area through this pass-out.

5. The exit from this pass-out shall be secured to prevent unauthorized entry.

3.3 Personnel Protection Requirements

A. Documentation of personal protection requirements.

1. The Contractor shall prepare and timely maintain a log to establish a permanent record that training, fit testing, and other like requirements of this section are being performed for each employee as intended by the rules and these specifications.

2. Said log is to be kept on-site and convenient for inspection by the Building Owner, asbestos Project Consultant, Employees and Regulatory Personnel.

3. A complete and legible copy of said log will be furnished to the Building Owner as part of the project completion requirements.

4. A sample of the form and content of this log will be submitted for review and approval no later than the pre-start meeting.

B. Training

1. Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have adequate training in accordance with part 4, of this document.

2. Special on-site training of equipment and procedures unique to this job site shall be performed as required.

3. Training in emergency response and evacuation procedures shall be provided.

C. Respiratory Protection

1. All respirator protection shall be provided to workers in accordance with the written respiratory protection program, which must include all items in OSHA 29 CFR 1910.134 (b) (1-11).

2. Worker shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

3. Respiratory protection consisting of powered air purifying respirators (PAPR) with full-face piece and HEPA filters or better will be provided and used by all asbestos abatement workers for full containment removal operations (half-face negative pressure respirators may be used once work practices have been established showing that fiber counts are well within the limits of said respirator). Half-face negative pressure respirators, equipped with HEPA filters, may be used for glovebag removal operations and for setting up, tearing down, pre-cleaning and work area(s) with the approval and or discretion of the Owner's representative. Workers will always wear a respirator when in the work area. While wearing the respirator, workers will not pull the respirator away from his/her face to talk, smoke, eat or drink. No workers will be permitted to wear a half-face respirator unless the area of seal is clean shaven. If half-face respirators are used as described above, then a qualitative fit test for each employee engaged in this work must be completed. These fit tests must be completed in accordance with OSHA regulations.

4. An adequate supply of cartridges and respirators shall be on-site and available for workers (regardless of respirator type).

5. Respirators shall be selected to meet the following level of protection:

   a) Airborne concentration of asbestos **NOT** in excess of 1 f/cc.

      - Half-face air-purifying respirator equipped with HEPA filter cartridges.

   b) Airborne concentration of asbestos **NOT** in excess of 5 f/cc.

      - Full facepiece air-purifying respirator equipped with HEPA filter cartridges.

   c) Airborne concentration of asbestos **NOT** in excess of 10 f/cc

      - Any powered air-purifying respirator equipped with HEPA filter cartridges or any supplied-air respirator operated in continuous flow mode.

   d) Airborne concentration of asbestos **NOT** in excess of 100 f/cc.

      - Full facepiece supplied-air respirator operated in pressure demand mode.

e) Airborne concentration of asbestos **GREATER** than 100 f/cc.

- Full facepiece supplied-air respirator operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus (SCBA).

6. Fit Testing

A. Workers must perform positive and negative air pressure fit tests each time a respirator is put on, whenever the respirator design so permits. Power air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.

B. Workers shall be given a qualitative fit test in accordance with the procedure detailed in OSHA Construction Standard 29 CFR 1926.1001, Appendix C, Qualitative Fit Test Protocols for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

C. Documentation of adequate respirator fit must be provided to the Building Owner.

7. No one having facial hair that lies along the sealing surface of the respirator, such as beards, sideburns or is unshaved shall be permitted to don a respirator and enter the work area.

8. Additional respirators (minimum of 2 each type) and training on their donning and use must be available at the work site for authorized visitors who may be required to enter the work area provided they are fit tested for that respirator and have a valid written medical opinion concerning physical appropriateness of their respirator use.

D. Protective Clothing

1. Disposable clothing including head, foot and full body protection shall be provided in sufficient quantities and adequate sized for all workers and authorized visitors.

2. Hard hats, protective eyewear, gloves, rubber boots, and or other footwear shall be provided as required for workers and authorized visitors. Safety shoes may be required for some activities.

3. The competent person shall examine worksuits worn by employees at least once per work shift for rips or tears that may occur during work operations. When rips or tears are detected they shall be immediately mended or the worksuit shall be replaced.

3.4 Removal Procedures

A. All Class I removal shall be supervised by a competent person as defined in Section 1.2.

B. Clean and isolate the work area in accordance with section 3.1.

C. Wet all asbestos containing material with water or amended water using airless sprayers capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material to the substrate. However, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. Maintain a high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but shall non-the less be used in all cases. If work area temperatures are below 32 degrees F water is subject to freezing, dry removal permits and procedures must be utilized.

D. Saturated asbestos containing material shall be removed in manageable sections. Removed material shall be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.

E. Material removed from building structures or components shall not be dropped or thrown onto the floor. Material shall be removed as intact sections or components whenever possible and carefully lowered to the floor. If this cannot be done a dust-tight chute with HEPA filtered mechanical exhaust sufficient that no dust escapes from the exit opening 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.

F. Containers (6-mil polyethylene bags or fiber drums) shall be sealed when full. Wet materials can be exceedingly heavy so double bagging of waste material is required. Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord. Bags shall be decontaminated on exterior surfaces by wet cleaning or HEPA vacuuming before being placed in clean drums and sealed with locking ring tops.

G. Large components removed intact may be wrapped in 2 layers of 6-mil polyethylene sheeting secured with tape for transport to the landfill.

H. Asbestos containing waste with sharp-edged components (e.g., nails, screws, metal lath or ducts) will tear the polyethylene bags and sheeting and shall be placed into drums for disposal.

I. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent dust suppressive method to remove all visible residue.

J. Clean-up shall proceed in accordance with Section 3.8.

K. After the work area has been rendered free of visible residues and passed a visual inspection by the Asbestos Project Consultant, a thin coat of a satisfactory encapsulation agent shall be applied, using airless sprayers, to all surfaces in the work area including structural members, building components and plastic sheeting on walls, floors and covering non-removal items, to seal in non-visible residue.

1. High temperature components such as boilers and pipes may not permit the application of some encapulants.

2. If insulation or acoustical materials are to be reapplied to the abated area, be certain that the encapsulant selected will permit good adhesion to the substrate. A small area should be tested before application.

L. Special circumstances (e.g., live electrical equipment, high amosite content of material, materials previously coated with an encapsulant or paint) may prohibit the adequate use of wet methods to reduce fiber concentrations. For these situations, a dry removal may be required. The Contractor will have to acquire special permits, different from those mentioned herein from the NESHAP enforcement agency.

3.5 Enclosure Procedures

A. Clean and isolate the work area in accordance with Section 3.1.

B. Spray areas, using airless sprayers, which will be disturbed during the installation of hangars or other support framing materials for the enclosure with water. Keep these areas damp to reduce airborne fiber concentrations.

C. Remove loose or hanging asbestos containing materials in accordance with the requirements in Section 3.4.

D. After installation of attaching devices and before installation of enclosure, repair damaged areas of fireproofing/thermal insulation materials as required using a non-asbestos containing replacement material. Prepare surfaces and apply replacement material in accordance with manufacturer's recommendations.

E. Enclosure procedures will include the following requirements as a minimum:

1. Use hand tools equipped with HEPA filtered local exhaust ventilation to drill, cut into or otherwise disturb asbestos containing materials during the installation of support systems for the enclosures. (Alternatively, these areas of material could be removed prior to installation of supports.)

2. Use materials that are impact resistant and that will provide an air-tight barrier once construction is complete.

3. Relocate utilities as necessary and reinstall in a manner, which permits full utilization, and does not disturb the integrity of the enclosures or require the enclosure to be opened for routine maintenance.

F. Enclosed asbestos containing materials shall be designated appropriately in order to warn building maintenance in the event that they are required to disturb the enclosure. All labels shall be prominently displayed in readily visible locations and shall remain posted until the ACBM that is labeled is removed. The warning label shall read, in print which is readily visible because of large size or bright color, as follows:

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY

3.6 Class I Negative Air Glove Bag Procedures

A. At least two persons shall perform Class I glovebag removal (one person may be designated as a roamer).

B. The poly bag is modified so as to allow make-up air to enter the bag but not leave the bag. This is done with the addition of a poly flap, which is taped inside the bag over an opening cut into the bag.

C. Glove bagging shall not begin until:

1. The area to be worked on has been regulated by barrier tape and warning signs and all employees within the immediate vicinity have been notified of the abatement project.

2. The workers are suited up and are wearing the appropriate respirators and protective clothing.

D. The outside of the insulation shall be wet wiped and sprayed with an encapsulant prior to the bag being placed on the pipe,

E. Glovebags must be installed so that they completely cover the pipe or other structure where asbestos work is to be done. Glovebags are installed by cutting the sides of the glovebag to fit the size of the pipe from which asbestos is to be removed. The glovebag is attached to the pipe by folding the open edges together and securely sealing them with tape and staples. All openings in the glovebag must be sealed with duct tape or equivalent materials (except for the make-up air flap opening). Use only seamless bags, so the bottom seam does not have to be taped. If the size of the pipe warrants it, a small, rigid plastic collar is inserted into the bag to insure that the bag does not collapse when negative pressure is created. All of the necessary tools and equipment have been inserted into the bag prior to its being sealed.

F. Using a small HEPA filtered vacuum unit, negative pressure is created within the Negative Air Glovebag. This negative ventilation is created prior to any abatement work and is maintained throughout the use of the bag.

G. The employee who is performing and asbestos removal with the glovebag must don at least a half mask dual-cartridge HEPA-equipped respirator and protective clothing.

H. The removed asbestos material from the pipe or other surface that has fallen into the enclosed bag must be thoroughly wetted with a wetting agent (applied with an airless sprayer through the pre-cut port provided in most glovebags or applied through a small hole in the bag.

I. Once the asbestos material has been thoroughly wetted, it can be removed from the pipe, beam or other surface. The choice of tools to be used to remove the asbestos containing material depends on the type of material to be removed. Asbestos containing materials are generally covered with painted canvas and or wire mesh. Painted canvas can be cut with a razor knife and peeled away from the ACM underneath. Once the canvas has been peeled away, the ACM underneath may be dry, in which case it shall be resprayed with a wetting agent to ensure that it generates as little dust as possible when removed. If the ACM is covered with wire mesh, the mesh should be cut with appropriate tools and removed. A wetting agent must then be used to spray any layer of dry material that is exposed beneath the mesh, the surface of the stripped underlying structure and the inside of the glove bag.

J. After removal of the layer of ACM, the pipe or surface from which asbestos material has been removed must be thoroughly cleaned with a wire brush and wet-wiped with a wetting agent until no traces of the ACM can be seen.

K. Any asbestos containing insulation edges that have been exposed as a result of the removal or maintenance activity must be encapsulated with a bridging

encapsulant to ensure that the edges do not release asbestos fibers to the atmosphere after the glovebag has been removed.

L. When the asbestos removal and encapsulation have been completed, the vacuum hose from the HEPA filtered vacuum is used to remove any air in the bag that may contain asbestos fibers. When the air has been removed from the bag, the bag shall be squeezed tightly (as close to the top as possible), twisted and sealed with tape, to keep the asbestos materials safely in the bottom of the bag. The HEPA vacuum can then be removed from the bag (the vacuum port must be sealed after the HEPA vacuum is removed) and then the glovebag itself can be removed from the work area. The sealed glovebag(s) is/are then placed into another 6-mill thick approved asbestos disposal bag, doubled bagged, and disposed of properly.

3.7 Prohibitions

A. The following work practices and equipment shall not be used for work related to asbestos or for work which disturb ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments.

1. High-speed abrasive disc saws that are not equipped with point of cut exhaust ventilator or enclosures with HEPA filtered exhaust air.

2. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by compressed air.

3. Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM or PACM.

4. Employee rotation as a means of reducing employee exposure to asbestos.

3.8 Clean-up Procedure

A. Remove and containerize all visible accumulation of asbestos containing material and asbestos contaminated debris, utilizing rubber dust pans and rubber squeegees to move material around, promptly into leak-tight containers. Special care shall be taken to minimize damage to floor sheeting.

B. Wet clean all surfaces in the work area using rags, mops and sponges as appropriate. To pick up excess water and gross wet debris, a wet-dry HEPA vacuum may be used. NOTE: Some HEPA vacuums might not be wet-dry vacuums.

C. Remove the cleaned outer layer of plastic sheeting from walls and floors. Windows, doors, HVAC system vents and all other openings shall remain sealed.

The negative pressure ventilation units shall remain in continuous operation. Decontamination enclosure systems shall remain in place and be utilized.

D. After cleaning the work area, wait at least 24 hours to allow fibers to settle and HEPA vacuum and wet clean all objects and surfaces in the work area again.

E. Removal all containerized waste from the work area and waste container pass-out airlock.

F. Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.

G. Inspect the work area for visible residue, if any accumulation of residue is observed, it will be assumed to be asbestos and the 24-hour settling period/cleaning cycle repeated.

H. The work area shall be cleaned until it can pass a visual inspection by the Building Owner's Consultant. **Additional cleaning cycles shall be provided as necessary, at no cost to the Building Owner until the area passes a visual inspection by the Building Owner's Consultant. The Contractor will bear all costs of additional cleanings, visual inspections and final air clearances.**

I. Following the satisfactory completion of clearance air motoring, remaining barriers may be removed and properly disposed of.

3.9 Encapsulation Procedures

A. NO encapsulation shall occur until the area has passed a visual inspection and approval by the Asbestos Project Consultant.

B. Lock-down encapsulant.

1. Apply lock-down encapsulant according to manufacturer's instructions.

2. Apply lock-down encapsulant in quantities sufficient enough to adequately cover existing surfaces.

C. Apply encapsulant using airless spray equipment (see Section 2.2 Equipment – Encapsulation).

3.10 Clearance Air Monitoring

A. Following the completion of clean-up operations, passage of visual inspection by the Asbestos Project Consultant and encapsulation the Contractor shall notify the Asbestos Project Consultant that the work are is ready for clearance air monitoring.

B. The Asbestos Project Consultant shall then sample the air in the work area for airborne fiber concentrations for final clearance determination.

C. The air sampling shall be conduced using sampling pumps calibrated at a flow rate of at least two (2) and not more than fifteen (15) liters per minute using collection media and procedures in accordance with NIOSH Standard Analytical Method 7400 for Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM) in accordance with 40 CFR Part 763 Appendix A to Subpart E – Interim Transmission Electron Microscopy. Air volumes shall be sufficient to provide reliable results down to 0.01 fibers per cubic centimeters of air (f/cc) or lower for PCM and 70 structures per millimeter squared (s/mm2) or lower for TEM.

D. The Asbestos Project Consultant will establish the number of samples that are required and the specific locations where they shall be taken, with the concurrence of the Owner.

E. Aggressive sampling shall be performed using a one-horse leaf blower.

F. Air samples shall be analyzed by Phase Contrast Microscopy or Transmission Electron Microscopy.

G. All samples at all locations shall indicate concentrations or airborne fibers less than or equal to 0.01 f/cc for PCM and 70 s/mm2 for TEM, for release of the work area.

H. Areas exceeding concentrations of 0.01 f/cc for PCM and 70 s/mm2 for TEM shall be recleaned using procedures in Section 3.8 and retested until satisfactory levels are obtained. The Contractor will bear all costs of additional clearance air monitoring when such additional monitoring is mandated by <u>said</u> recleaning.

3.11 <u>Disposal Procedures</u>

A. As the work progresses, to prevent exceeding available storage capacity on site, sealed and labeled containers of asbestos containing waste shall be removed and transported to the prearranged disposal location.

B. Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable state and local requirements.

C. All dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the Building Owner for his records. The record keeping format shall utilize a chain-of-custody form which includes the names and addresses of the Generator (Building Owner), contractor, pickup site and disposal site, number of bags or estimated quantity of asbestos waste and the type of containers used. The form will be signed by the Generator, the Contractor, and

the Disposal Site Operator, as the responsibility for the material changes hands. If a separate hauler is employed, his/her name, address, telephone number and signature will appear on the form.

D. Transportation to the landfill

1. Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck for transportation.

2. When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries, trucks with lift gates are helpful for raising drums during truck loading.

3. 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 spilled containers. Floor sheeting shall be installed first and extend up the side walls. Wall sheeting shall be overlapped and taped into place.

4. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structure components shall be secured to prevent shifting and bags placed on top. If required to prevent bag punctures, disposable dunnage shall be used between sharp or irregular components and the bags. Do not throw containers into truck cargo area.

5. Personnel loading asbestos containing waste shall be protected by disposable clothing including head, body, and foot protection and at a minimum, half-face air-purifying dual cartridge respirators equipped with high efficiency filters

6. Any debris or residue observed on containers or surfaces outside of the work area resulting from cleanup or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and or wet methods as appropriate.

7. Large metal dumpsters are sometimes used on site for asbestos waste collection prior to transport and final disposal. These must have doors or tops that can be closed and locked, or other suitable means to prevent vandalism or other disturbance of bagged asbestos debris and wind dispersion of asbestos fibers. Unbagged material shall not be placed in these containers, nor shall they be used for non-asbestos waste. Bags shall be placed, not thrown, into these containers to avoid splitting.

E. Disposal at the landfill

1. Upon reaching the landfill, trucks are to approach the dump locations as closely as possible for unloading of the asbestos containing waste.

2. Bags, drums and components shall 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.

3. Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of trucks.

4. 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 air-purifying dual filter respirators equipped with HEPA filters.

5. Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and 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.

6. If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator, the Contractor shall require protective clothing and respiratory protection for the duration of this operation be provided by the landfill operator before commencing the off loading.

3.12 Re-Establishment of the Work Area(s) and Systems

A. Re-establishment of the work area shall only occur following the completion of clean-up procedures and after clearance air monitoring has been performed and documented to the satisfaction of the Building Owner.

B. Polyethylene barriers shall be removed from walls and floors at this time, maintaining decontamination enclosure systems and barriers over doors, windows, etc. as required.

C. The Contractor and the Building Owner shall visually inspect the work area for any remaining visible residue. Evidence of contamination will necessitate additional cleaning requirements in accordance with Section 3.8.

D. Additional air monitoring shall be performed in accordance with Section 3.10 if additional clean up is necessary.

E. Following satisfactory clearance of the work area, remaining polyethylene barriers may be removed and disposed of as asbestos contaminated waste.

F. At the discretion of the Contractor, mandatory requirements for personal protective equipment may be waived following the removal of all barriers.

G. Re-secure mounted objects removed from their former positions during area preparation activities.

H. Re-locate objects that were removed to temporary locations back to their original positions.

I. Re-establish HVAC, mechanical and electrical systems in proper working order. Remove contaminated HVAC system filters and dispose of as asbestos contaminated waste. Decontaminate filter assembly using HEPA vacuum and wet cleaning techniques. Install new filters in HVAC systems. Dispose of old filters.

J. Repair all areas of damage that occurred as a result of abatement activities.

PART 4 - SUPPORT ACTIVITIES AND PERSONNEL

4.1 Training

A. Training shall be provided by the Contractor to all employees or agents who may be required to disturb asbestos containing or asbestos contaminated materials for abatement and auxiliary purposes and to all supervisory personnel who may be involved in planning, execution or inspection of abatement projects.

B. Training shall include the following topics:

1. The health hazards of asbestos including the nature of various asbestos related diseases, routs of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods for disease and health basis for standards.

2. The physical characteristics of asbestos including fiber size, aerodynamic properties, physical appearance and uses.

3. Employee personal protective equipment including the types and characteristics of respirator classed, limitations of respirators, proper selection, inspection, use, maintenance and storage of respirators, field testing the face-piece-to face seal (positive and negative pressure fitting tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit (e/g/, facial hair), selection and use of disposable clothing, use and handling of launderable clothing, non-skid shoes, gloves, eye protection and hard hats.

4. Medical monitoring requirements for workers including required and recommended tests, reasons for medical monitoring and employee access to records.

5. Air monitoring procedures and requirements for workers including description of equipment and procedures, reason for monitoring, types of samples and current standards with recommended changes.

6. Work practices for asbestos abatement including purpose, proper construction and maintenance of air-tight plastic barriers, job set-up of airlocks, worker decontamination systems, waste transfer air-locks, posting of warning signs, engineering controls, electrical and ventilation system lockout, proper working techniques, waste clean up, storage and disposal procedures.

7. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking and chewing in the work area.

8. Special safety hazards that may be encountered including electrical hazards, air contaminants (CO, wetting agents, encapsulant, and materials from Building Owner's operation), fire and exploding hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress and noise.

9. Workshops affording both supervisory personnel and abatement workers the opportunity to see and experience the construction of containment barriers and decontamination facilities.

10. Supervisory personnel shall, in addition, receive training on contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection, medical surveillance programs, EPA, OSHA and MIOSHA recordkeeping requirements, and other topics as requested by the Building Owner.

C. Training must be provided by individuals qualified by virtue of experience and education, and State accreditation to discuss the topic areas in 4.1.

D. Training is to have occurred within 12 months prior to the initiation of abatement activities.

E. The Contractor must document training by providing date of training, training entity, course outline, and names and qualifications of trainers. Training must meet AHERA Appendix C requirements, as a minimum.

F. Documentation of worker and supervisor training and accreditation will not relieve the Contractor from manning this project with workers and supervisor(s) able and willing to comply with the letter and spirit of the regulations and these specifications.

4.2 Medical Monitoring

A. The Contractor must provide medical monitoring to any employee or agent that may be exposed to asbestos in excess of background levels during any phase of the abatement project.

B. Medical monitoring shall include at a minimum the following:

1. A work medical history to elicit symptomology of respiratory disease.

2. A chest x-ray evaluated by a Certified B-reader.

3. A pulmonary function test, including forced vital capacity (FVC) and forced expiratory volume at one second (FEV), administered and interpreted by a Certified Pulmonary Specialist.

C. Employees shall be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. Examining physician shall be aware of the nature of respiratory protective devices and their contributions to breathing resistance. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he/she will be required to perform, as well a special workplace conditions such as high temperatures, high humidity, and chemical contaminants to which he/she may be exposed. All medical monitoring must meet 29 CFR 1926.58 (m) as a minimum.

4.3 Asbestos Project Consultant

A. The Asbestos Project Consultant is designated and paid by the Building Owner. This person could be an architect, engineer, industrial hygienist or other individual(s) possessing the qualifications detailed in Section 4.3 and including accreditation by the Michigan Department of Public Health's asbestos section as a Project Designer.

B. The Asbestos Project Consultant shall be able to demonstrate through special education, training, skills, knowledge or experience satisfactory to the Building Owner to indicate the ability to carry out the following activities as required:

1. Assist in decision making regarding selection of procedures.

2. In most cases will have written contract specifications for the abatement project.

3. Assist in evaluation of bids and selection of a contractor.

4. Understand and explain contract specifications.

5. Tours work area with the Contractor and solicits agreement on pre-abatement conditions of the work area.

6. Inspect and approve barriers and decontamination enclosure systems before asbestos removal begins and regularly until completion.

7. Observe activities at all times during the course of abatement.

8. Meet with the Contractor daily to review work progress and discuss problems or adjust procedures as appropriate.

9. Perform bulk material or air sampling and all workplace inspections and clearance inspections for the Building owner.

10. Report on abatement to the Building Owner.

11. Request, review, and maintain Contractor submittals.

12. Provide training and or respirator fit testing to personnel.

13. Be accredited by the State of Michigan Asbestos Program as a Building Inspector, Project Designer and Contractor/Supervisor.

C. The Building Owner's representative shall have the authority to shutdown any job activities without recourse if they are not being performed in accordance with applicable regulation or guidelines or the requirements of this specification. The practical aspects of drafting regulations sometimes result in compromises. Guidelines to good practices may require more or be more restrictive than regulations. The Asbestos Project consultant shall report to the Building Owner in writing any such deficiencies not corrected timely and satisfactorily after notifying the contractor there of. A copy of any such notice to the Building Owner shall be sent to the contractor at the same time.

4.4 Air Sampling Professional (ASP)

A. The Air Sampling Professional (ASP) will be ARM Industrial & Environmental Consultants, LLC and shall conduct all air sampling for the Building Owner.

B. The ASP will be conducting air sampling in accordance with the OSHA construction Standard for Asbestos, 29 CFR 1926.1101 Appendix A.

C. The following schedule will be utilized for air sampling during the project (in addition to OSHA compliance monitoring).

1. Pre-abatement sampling – A sufficient number of air samples shall be collected prior to the start of abatement activities in order to determine prevalent airborne asbestos concentrations. Samples will be taken both inside and outside of the work area to establish existing levels under normal activity conditions.

2. Sampling during the abatement project

a) Sampling during the abatement project will consist of personal, critical barriers and final air clearance samples. All sampling will be in sufficient numbers and conducted as to satisfy all Federal, State, and Local requirements.

b) Post-abatement (clearance) air sampling will be conducted following the completion of clean-up operations, passage of visual inspection by the ASP and encapsulation by the Contractor in accordance with sub-sections A through H of Section 3.10.

c) All K-12 school post-abatement air samples collected in situations involving removal, enclosure, encapsulation of more than 160 square feet or 260 linear feet of ACBM shall be analyzed under the "Mandatory Transmission Electron Microscopy Method" as defined in 40 CFR, Part 763 (AHERA rules). Post abatement air samples collected in situations involving removal, enclosure, or encapsulation of less than 160 square feet or 260 linear feet of ACBM shall be analyzed using the NIOSH 7400 Method.

4.5 Laboratory Services

A. Laboratories utilized for analyzing air samples by Phase Contrast Microscopy (PCM) shall be satisfactory participants in the AIHA Proficiency Analytical Testing (PAT) program for asbestos analysis and shall also participate in an "inter" and "intra" quality control program for asbestos analysis.

B. Laboratories utilized for analyzing air samples by transmission Electron Microscopy (TEM) shall strictly follow 40 CFR, Part 763 (AHERA rules) – "Mandatory Transmission electron Microscopy Method".

C. Laboratories used for bulk material identification shall be satisfactory participants in the EPA quality assurance program for bulk asbestos analysis (NVLAP).

D. The period of time permitted between the collection of air samples and the availability of results shall be less than 24 hours for samples collected during abatement activities. Pre-abatement air samples shall have been analyzed before abatement work begins. Clearance Air Samples shall be analyzed on site, for PCM clearances, and the results made available as soon as possible. On-site analytical capabilities are preferred for all PCM sampling results. Clearance Air Samples that will be analyzed by TEM shall have a 48-hour turn around time, unless the Building Owner requests a quicker analysis period. In this case the Building Owner will be responsible for any additional charges over the 48-hour normal charge.

ASBESTOS ABATEMENT SPECIFICATION BID FORM

Specification # 0000245

Bid # 0000245

PROJECT: The removal of all asbestos containing materials and non-asbestos containing materials in the North Muskegon High School & Middle School and North Muskegon Elementary School as described in Specification # 0000245.

Name of Bidder: _____

Address of Bidder: _____

_____

Telephone/Fax Number: _____

The undersigned, having examined and understood all bid documents, do hereby submit the following bid for asbestos removal covering all services, labor, materials, equipment, permits, fees, and insurance necessary to complete the project on time. ***NOTE: Project is not a Prevailing Wage Project.***

The undersigned agrees to perform the work as described in Specification # 0000245 for the total sum of:

Phase 1 Total: _____
Phase 2 Total: _____
Phase 3 Total: _____
Total for Phase 1, 2 & 3_____Dollars
(_____).

The total sum amount shall be in both **words** and **figures** with the amount in figures governing in the event of a discrepancy.

This bid calls for ten (10) hour workdays, four or five (4 or 5) day workweeks (1st Shift: 7:00 a.m. to 5:30p.m.).

Number of abatement workers, per day, on the job site: _____

Estimated number of work days to complete job: _____

Signed By: _____ Date: _____

Title: _____

Federal I.D. # _____

ASBESTOS ABATEMENT SPECIFICATION BID FORM

Specification # 0000245

Bid # 0000245

This specification covers the abatement of exposure to asbestos hazards from building structures and components. It is the intent of the contract Documents to show all of the work necessary to complete the project. In spite of any minor omissions, the contractor's bid is to include everything necessary to timely, workmanlike and safely complete this abatement project; and return the property for the owner's use according to these specifications.

The following are unit prices for work that may be discovered during the abatement process and was not addressed in the specification documents.

Unit Price for ACM Floor Tile Removal.

Unit Price per Square Foot: _____

Unit Price for Carpet Removal.

Unit Price per Square Foot: _____

Unit Price for Mastic Removal.

Unit Price per Square Foot: _____

Unit Price for Fire Door Removal .

Unit Price per Fire Door : _____

Unit Price for Fire Door Frame Removal .

Unit Price per Fire Door: _____

Unit Price for TSI Removal (Includes pipe runs, pipe fittings & hangars).

Unit Price per Linear Foot: _____

ASBESTOS ABATEMENT SPECIFICATION BID FORM
(Page 3 of 5)

Specification # 0000245

Bid # 0000245

Unit Price for Ceramic Tile Removal (<1% ACM Material).

Unit Price per Square Foot: _____

Unit Price for 2' X 4' Drop Ceiling Tile Removal (<1% ACM Material).

Unit Price per Square Foot: _____

Unit Price for Re-Mobilization Fee.

Unit Price per Re-Mobilization: _____

Signed By: _____ Date: _____

Title: _____

ASBESTOS ABATEMENT SPECIFICATION BID FORM
(Page 4 of 5)

Specification # 0000245

Bid # 0000245

Sworn and Notarized Familial Disclosure Statement

All bidders must provide familial disclosure in compliance with MCL 380.1267 and attach this information to the bid. The Bid will be accompanied by a sworn and notarized statement disclosing any familial relationship that exists between the owner or any employee of the bidder and any member of the North Muskegon Public Schools Board of Education or the Superintendent of North Muskegon Public Schools. The District will not accept a bid that does not include this sworn and notarized disclosure statement.

The following familial relationship exists between the owner or any employee of the bidder and member(s) of the North Muskegon Public Schools Board of Education or the Superintendent of North Muskegon Public Schools.

	Owner/Employee Name	Related to:	Relationship
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____

Attach additional pages if necessary to disclose familial relationship

☐ **There is no familial relationship that exists** between the owner or any employee of the bidder and member(s) of the North Muskegon Public Schools Board of Education or the Superintendent of North Muskegon Public Schools.

BIDDER'S FIRM NAME _____

BY (SIGNATURE) _____

PRINTED NAME & TITLE _____

Subscribe and sworn before me, this _____ Seal:

Day of _____, 2025, a Notary Public

In and for _____ County, _____

_____
(Signature)
NOTARY PUBLIC

My commission Expires on: _____

ASBESTOS ABATEMENT SPECIFICATION BID FORM

AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

The undersigned, the owner or authorized officer of the below-named applicant (the "Applicant"), pursuant to the compliance certification requirement provided by North Muskegon Public Schools (the "School District") Request For Proposals (the "RFP"), hereby certified, represents and warrants that the Applicant *(including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event Applicant is awarded a contract as a result of the aforementioned RFP, the Applicant will not become an "Iran linked business" at any time during the course of performing any services under the contract.

The Contract further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date that it is determined that the person has submitted the false certification.

APPLICANT: _____
Name of Applicant By: _____
Title: _____
Date: _____

STATE OF MICHIGAN

COUNTY OF _____.

The instrument was acknowledged before me on the ____ day of _____, 2025,
by _____.

_____
Notary Public
_____ County, Michigan

Acting in the County of: _____

My Commission Expires: _____