
SECTION 6
ABATEMENT/HAZARDOUS MATERIALS
SPECIFICATION

SECTION 028213 - HAZARDOUS MATERIALS ABATEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION

- A. This Section includes administrative and procedural requirements for abatement of asbestos containing materials related to this Project.
- B. Work Included: Work efforts to be completed for this project include the following:
 - 1. Removal of all designated asbestos containing material (ACM), fluorescent lamps, lighting fixture ballasts, refrigerant-containing equipment, emergency lights, and batteries from exit signs and lighting as identified in Section 1.2(C) and the attached EA Group Report. **Work is being bid in preparation for demolition of the structures including the Main Building, Sedimentation Building, and the Pump House.**
 - 2. The CONTRACTOR shall furnish all labor, materials, services, and equipment which is specified, shown, or reasonably implied for the following asbestos and hazardous materials abatement activities:
 - a. Develop work plan for review and approval
 - b. Construction containment/ isolation enclosures, where applicable
 - c. Remove asbestos containing materials and hazardous materials (see plans and specifications for estimated quantities and/or locations)
 - d. Properly dispose of asbestos containing wastes and hazardous material waste. Universal wastes may be recycled.
 - e. Note: **All** material that is removed as ACM will be disposed of at a licensed asbestos waste disposal site.
 - f. Decontaminate all work areas
 - g. Note: Paint in the Main Building and Pump House was found to contain lead. Any contractor disturbing lead paint shall comply with OSHA's Lead Exposure in Construction Standard, Title 29 of the Code of Federal Regulations, Part 1926, Section 62 [29 CFR 1926.62].

- C. The Work shall consist of a project where the Contractor shall provide all the materials, labor and equipment necessary to remove and dispose of designated asbestos containing materials (ACM) as asbestos-containing and contaminated waste at the Fairport Water Works Plant, in all designated locations identified at the pre-bid meeting and as set forth herein. Foundation waterproofing and sub slab vapor barrier, if found, will be part of the demolition contractor's work, and is not part of this work. It will also include reclaiming refrigerant and recycling/disposal of universal wastes (fluorescent lamps and batteries from exit signs and lighting), ionizing type smoke detectors, and lighting fixture ballasts. Work is expected to be completed in one mobilization. The structures are scheduled for demolition. Specific asbestos containing materials to be removed are shown in Table 1. Contractor may utilize the attached asbestos abatement floor plans and hazardous materials report to identify the work locations. Contractor is responsible for the abatement of all designated asbestos containing materials and hazardous materials. The Contractor shall coordinate his work with the OWNER, ARCHITECT, OWNER'S REPRESENTATIVE and ABATEMENT CONSULTANT.

During the bidding process, in case of any discrepancy identified by bidding contractor, either in the quantity estimates, drawings, summary reports or in the specifications, the matter shall be promptly submitted to the project designer who shall make necessary changes in a written addendum. Any adjustment by the Contractor without such notification shall be at his own risk and expense. **Work which is not pre-approved in writing shall be the responsibility of the Contractor. Contractor shall submit a lump sum bid to complete ALL work in the Work Areas as shown during the pre-bid walkthrough, and as identified in the specifications. Unit pricing shall be applicable for work outside of the designated scope of work (unforeseen conditions), and beyond a 10% no change differential for estimated quantities. OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT and Contractor shall maintain a running total of quantities for unit price materials that are removed. Once the total estimated quantity (plus or minus 10%) is reached, the unit costs for removal of these additional materials shall be multiplied by the total amount removed, and the total cost will be treated as a change order (or a deduct) to the contract. All additional work shall be pre-approved by OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT. Contractor shall submit a change order in writing to OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT for additional work during the course of the project.**

Owner cannot guarantee that all asbestos-containing materials have been identified by the survey supporting this specification. Additional asbestos materials, not previously identified or quantified, are frequently encountered during renovation or demolition. Actual quantities of asbestos material may

vary from the estimates provided in our report due to identification of additional materials and difficulties in measuring hidden materials. Prior to demolition or renovation of any structure or equipment, materials that were previously inaccessible or excluded from sampling should be sampled and analyzed for asbestos.

Hazardous materials work will be performed in preparation for renovation work in the building. Contractor shall remove all perishable debris. The Contractor shall protect anything designated by the Owner to be saved. The Contractor shall move any furnishings remaining in each work area. Contractor shall perform demolition work (i.e. casework, cabinetry) as necessary to access all designated asbestos containing materials. Contractor shall remove all encapsulated/contaminated barriers at the completion of the project.

Owner shall maintain water and electrical service to the work areas. Contractor shall be responsible for electrical access, connections, and lock out/tag out (“make safe”) for all work areas. Contractor shall be required to provide any temporary power and lighting to the work areas. Contractor shall be responsible for all supplies/materials needed for temporary power panel installations.

Contractor shall remove and recycle/dispose of hazardous materials and remove and dispose of asbestos-containing materials (ACMs) as shown in Table 1 below. Contractor may also reference abatement drawings (Figures 1 through 4) and the attached EA Group survey. **Building owner is responsible for removal of all chemicals.** Contractor shall protect all materials not designated for removal. Base Bid shall include the above described work. Contractor is responsible for verifying quantities shown in Table 1. The drawings do not show the exact location of all asbestos related removal work.

Table 1. Base Bid Asbestos-Containing Materials

Location	Material	Est. Quantity	Removal Technique
Sedimentation Building	Tar Coating on Exterior	2,250 square feet	OSHA Class II Intact Removal
Main Building Roof	Built-Up Roofing	1,620 square feet	OSHA Class II Intact Removal
Main Building Roof	Roof Flashing	584 square feet	OSHA Class II Intact Removal
Main Building Lab/Office	Floor Tile and Mastic	180 square feet	OSHA Class II Containment
Main Building New Lab	Floor Tile and Mastic	312 square feet	OSHA Class II Containment

In all cases, the term “containment” shall mean a work area where minimum prepping requirements prior to gross removal will consist of installing critical barriers and two layers of polyethylene on the floor, establishing negative pressure, and having a three stage decontamination unit adjacent to the work area (unless a remote location is approved and established).

In all cases, the term “full containment” shall mean a work area where minimum prepping requirements prior to gross removal are equal to that for a “containment”, except that all walls, ceilings and other items that are not be removed shall be covered with at least one layer of polyethylene prior to gross removal. Contractor shall maintain a three-stage decontamination unit adjacent to the work areas; remote decontamination is allowed based on authorization and agreement with OWNER’S REPRESENTATIVE OR ABATEMENT CONSULTANT. For full containment work, a manometer will be used to constantly monitor the pressure differential across the critical barrier. A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be established prior to the start of removal and maintained within the negative pressure enclosure as evidenced by manometric measurements. Contractor shall install and maintain a minimum number of air filtration devices in order to obtain at least four air changes in the work area per hour.

Contractor shall be required to perform critical barrier extension work as necessary for containments and full containments in order to establish negative pressure.

If more than one work activity will be performed in a given area, the more stringent work area preparation methods and levels of personal protective equipment shall be followed.

1. Tar Coating removal work has been classified as OSHA Class II work, and will be conducted in a manner in which the material is removed as intact as possible within a regulated area using wet removal techniques, and excavator or other equipment as necessary. Contractor shall double bag/wrap these materials unless they are placed in a double poly-lined dumpster. These materials will be taken to an EPA approved landfill that accepts regulated asbestos-containing waste materials. Double suiting procedures may be used, and there will be no mandatory showering. Decontamination zones will be established to accommodate the abbreviated double-suiting decontamination procedures. At a minimum, double suiting decontamination procedures will consist of vacuuming outer suit and wet wiping respirators and exposed skin within a designated

- decontamination area within the regulated area, removing and disposing the outer suit, then moving out to a designated decontamination area outside the regulated area and repeating the same procedure, then removing and disposing the inner suit. All suits will be disposed of as ACM waste. No critical barriers or negative pressure containments are required providing the materials remain intact, but work areas do need to be regulated. Contractor shall initially barrier tape Work area to identify the regulated space. Contractor shall maintain a clean drop cloth adjacent to the work areas for decontaminating personal protective equipment and tools. Work areas shall be cleared with the Contractor having successfully passed a visual inspection by the Owner's on-site Representative.
2. Roof and roof flashing removal work has been classified as OSHA Class II work, and will be conducted using applicable wet removal methods within a regulated area, keeping the material as intact as possible. The Contractor shall perform all removal work in a manner to minimize damage to the materials being removed. Contractor shall initially barrier tape each Work area to identify the regulated space, and install appropriate signage. Contractor shall dismantle all necessary materials in order to access asbestos containing materials. No negative pressure containments are required providing the materials remain intact, but work areas do need to be regulated and critical barriers shall be placed over any HVAC openings unless they are otherwise isolated. All applicable requirements under 29 CFR 1926.1101(g)(8)(ii) shall apply to the handling of roofing materials during and following removal. Contractor shall maintain a clean drop cloth adjacent to the work areas for decontaminating workers, personal protective equipment and tools. **All waste materials will be containerized and disposed as ACM waste in an EPA approved asbestos waste landfill.** The work areas will be cleared by the Owner's Representative performing a visual inspection.
 3. Floor tile and mastic work has been classified as OSHA Class II work, and if removed intact using hand tools will be conducted within a containment. If vacuum blasting methods are used, work will be conducted within a full containment. Prepping for this work shall include at a minimum, critical barriers and negative air to control air flow. Air shall be exhausted to the outdoors. HEPA exhausts out window openings shall be secured with plywood. Mastics shall be removed by chemical method or vacuum blasting. All work will require, at a minimum, an adjacent single stage decontamination unit with air locks entering and exiting the containment for intact removal, utilizing double suiting decontamination methods. If vacuum blasting is conducted, Contractor shall maintain a three-stage decontamination unit adjacent to the full containment with full personnel decontamination required.

4. PCM final clearance and analysis shall be performed in all containments following a successful visual inspection. Regulated areas will require at least a successful visual inspection.
 5. All OSHA Class II work will require at least a half-face air purifying respirator for respiratory protection. All respirator types will be equipped with the appropriate HEPA (P-100) cartridges.
 6. At a minimum, double suiting decontamination procedures will consist of vacuuming outer suit and wet wiping respirators and exposed skin within the decontamination unit or designated decontamination area within the regulated area, removing and disposing the outer suit, then moving out to a designated decontamination area outside the regulated area and repeating the same procedure, then removing and disposing the inner suit. All suits will be disposed of as ACM waste.
 7. All waste is to be contained, and labeled according to Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1926.1101) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS) [40 CFR 61] regulations. All waste will be taken to a licensed asbestos landfill.
- D. Codes and Regulations: The CONTRACTOR shall assume full responsibility and liability for compliance with all applicable Federal, State, and local regulations pertaining to work practices, transportation, disposal, worker protection, visitors to the site, and persons occupying areas adjacent to the site. Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect as if copied directly into the contract documents. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT, under the direction of the OWNER, shall have discretion to stop work at the CONTRACTOR's expense where applicable regulations are not adhered.
1. Federal requirements which govern asbestos abatement work or transportation and disposal of asbestos waste material include but are not limited to the following:
 - a. 29 CFR 1910.134 - Respiratory Protection
 - b. 29 CFR 1910.1200 - Hazard Communication
 - c. 29 CFR 1910.145 - Specifications for Accident Prevention Signs and Tags
 - d. 29 CFR 1910.1001 - Asbestos, tremolite, anthophyllite, and actinolite
 - e. 29 CFR 1910.2 - Access to Employee Exposure and Medical Records
 - f. 29 CFR 1926.1101 - Construction Industry
 - g. 29 CFR 1926.58 - Asbestos, tremolite, anthophyllite, and actinolite

- h. 40 CFR 61, Subpart A - National Emission Standard for Hazardous Air Pollutants
 - i. 40 CFR 61, Subpart M - National Emission Standards for Asbestos
 - j. 40 CFR 763 Asbestos Hazard Emergency Response Act (AHERA)
 - k. 40 CFR 763.117 and 40 CFR 763.302 - Notification Requirements; Reportable Quantity Adjustments
 - l. 49 CFR 171 and 172 - Hazardous Substances
 2. State requirements which govern asbestos abatement work or transportation and disposal of asbestos waste material include but are not limited to the following:
 - a. Chapter 3745-20, Ohio Administrative Code - Ohio EPA Asbestos Abatement Rules
 - b. Chapter 3710, Ohio Revised Code - Outline of the State of Ohio Asbestos Hazard Abatement Act
 3. Notices: Notifications shall be sent by registered mail and filed electronically if applicable, return receipt requested; a copy of the return receipt indicating delivery to the appropriate office shall be provided to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT prior to beginning any work.
- E. Coordination
 1. Coordinate all portions of the Asbestos Removal Contract work with the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT to assure proper scheduling and safe working conditions.
 2. Coordinate with the ENGINEER and OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT in regard to electrical shut-down and use of other facilities or utilities (i.e. water)
- F. Owner's Representative's Inspection
 1. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will conduct periodic inspections regarding: integrity of the barrier, maintenance of negative pressure in the work area, air flows into and out of the work area, AFD operation, work area isolation structures, decontamination facilities and protective coverings; worker protection program; CONTRACTOR's air monitoring program; proper performance of asbestos hazard abatement work including work area preparation and isolation, stripping, removal, encapsulation and disposal; conformance with EPA, OSHA, ODOT, and other regulations; and conformance with these Specifications.

1.3 DEFINITIONS

- A. Abatement: Procedures to control fiber release from Asbestos-containing building materials. Includes removal, encapsulation, and enclosure.
- B. Acoustical Plaster: Sprayed or troweled finish for acoustical control purposes.
- C. Action Level: Concentration of airborne fibers of 0.1 fibers per cubic centimeter (f/cc) of air calculated as an eight (8) hour time weighted average.
- D. Air Flow: The movement of air through a building.
- E. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.
- G. Air Sampling Professional: The professional contracted or employed to supervise air monitoring and analysis schemes. This individual is also responsible for recognition of technical deficiencies in Worker protection equipment and procedures during both planning and on-site phases of an Abatement Project. Acceptable Air Sampling Professionals include Industrial Hygienists, ABATEMENT CONSULTANT, and Environmental Scientists with equivalent experience in Asbestos air monitoring and Worker protection.
- H. Air Stream: A directed, moderately intense airflow, capable of dislodging fibers from surfaces or ACM.
- I. Ambient Air Samples: Air samples taken to determine the general condition of the surrounding air.
- J. Amended Water: Water to which a surfactant has been added.
- K. Area Monitoring: Sampling of airborne fiber concentrations within the Asbestos Work Area and outside the Asbestos Work Area which is representative of the airborne concentrations of Asbestos fibers which may reach the breathing zone.
- L. Asbestos: The term Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite in any combination.

- M. Asbestos Cement: A mixture of cement and asbestos fibers.
- N. Asbestos Cloth: Cloth woven from asbestos fibers.
- O. Asbestos Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.
- P. Asbestos Fibers: The term "Asbestos Fibers" shall be as defined by applicable local, State and Federal regulation and guidelines.
- Q. Authorized Visitor: The OWNER's Project team members, the Construction Manager, and any Representative of a regulatory or other agency having jurisdiction over the project.
- R. Breathing Zone: Area within 12 inches of a person's nose.
- S. Building OWNER: The OWNER of the building or his/her designated representative.
- T. Ceiling Limit: An exposure of airborne concentrations of Asbestos fibers at any time in excess of 1.0 fiber per cubic centimeters of air.
- U. Cementitious: A friable material which is densely packed and non-fibrous.
- V. Clean Room: An uncontaminated area or room, which is a part of the Worker Decontamination Enclosure with provisions for storage of Workers' street clothes and protective equipment.
- W. Contained Work Area: A Work Area which has been isolated, Plasticized, and equipped with a Decontamination Enclosure System.
- X. Curtained Doorway: A device to allow ingress or egress from one area to another while permitting minimal air movement between the areas, typically constructed by placing three overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, and securing the vertical edge of the outer two sheets along the opposite vertical side of the doorway.
- Y. Decontamination Enclosure System: A series of connected rooms, with air locks or curtained doorways between any two adjacent rooms, for the decontamination of Workers and of materials and equipment. A Decontamination Enclosure System always contains at least one airlock to the Work Area.

- Z. Delaminate: To separate into layers from the substrate onto which a material was applied.
- AA. Encapsulant (sealant): A liquid material which can be applied to Asbestos-containing material and which controls the possible release of Asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- BB. Encapsulation: All herein specified procedures necessary to apply an encapsulant to Asbestos-containing building materials to control the possible release of Asbestos fibers into the ambient air.
- CC. Enclosure: All herein specified procedures necessary to enclose completely Asbestos-containing material behind airtight, impermeable, permanent barriers.
- DD. ABATEMENT CONSULTANT: Independent Certified Asbestos Hazard Abatement Specialist/Evaluation Specialist that will provide monitoring abatement activities.
- EE. EPA: Environmental Protection Agency
- FF. Equipment Room: A contaminated area or room which is part of the Worker Decontamination Enclosure with provisions for storage of contaminated clothing and equipment.
- GG. Equipment Decontamination Enclosure: That portion of a Decontamination Enclosure System designed for controlled transfer of materials, waste containers and equipment, typically consisting of a Washroom and a Holding Area.
- HH. Excursion Limit: Limits exposure of workers to Asbestos fibers to one (1) fiber per cubic centimeter of air averaged over a period of thirty minutes.
- II. Fireproofing: Any material applied to a surface to retard the progress of, or reduce the effects of heat and fire.
- JJ. Friable Asbestos Material: Material that contains more than one percent Asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- KK. Glovebag Technique: A method with limited applications for removing small amounts of friable Asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in an Isolated Work

Area. The glovebag (typically constructed of six (6) mil polyethylene plastic), has two inward projecting long sleeve rubber gloves, one inward projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for Asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all Asbestos fibers released during the removal process. All Workers who are permitted to use the glovebag technique must be highly trained, experienced, and skilled in this method.

- LL. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining at least 99.97 percent of particles (Asbestos fibers) greater than 0.3 micrometers in mass median aerodynamic equivalent diameter.
- MM. HEPA Vacuum Equipment: Vacuuming equipment with a HEPA filter system.
- NN. Homogeneous Material: A material that is uniform in color and texture.
- OO. Holding Area: A room in the Equipment Decontamination Enclosure located between the Washroom and an uncontaminated area. The Holding Area comprises an airlock.
- PP. HVAC: Heating, Ventilation, and Air Conditioning
- QQ. Isolated (non-contained) Work Area: A Work Area which has critical barriers in place and is under negative pressure. It may be equipped with either an attached or a remote Decontamination Enclosure System.
- RR. Local Exhaust and Ventilation: Air filtration devices (AFDs) are locally exhausted after filtering contaminated air through HEPA filters via negative pressure.
- SS. Maximum Acceptable Level: An exposure of airborne concentrations of fibers of 0.05 fibers per cubic centimeter of air at any time. This level is a contractual standard for this project.
- TT. Mechanical Insulation: General term referring to insulation on pipe, tanks, vessels, boilers, etc.
- UU. Movable Object: A unit of equipment, furniture or other building component which is detached or can be detached from the building without destructive methods or results.

- VV. Negative Air Pressure Equipment Air Filtration Device (AFD): A portable local exhaust system equipped with HEPA filtration and capable of maintaining a constant, low velocity air flow into contaminated areas from adjacent uncontaminated areas.
- WW. Non-Friable Asbestos Material: Material that contains Asbestos in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the Asbestos is well bound and will not release fibers in excess of the Asbestos control limit during any appropriate use, handling, demolition, storage, transportation, processing, or disposal.
- XX. OSHA: Occupational Safety and Health Administration
- YY. PEL: Permissible exposure level of 8-hour time-weighted average of 0.1 fibers (longer than 5 micrometers), per cubic centimeter of air.
- ZZ. Personal Monitoring: Sampling of Asbestos fiber concentrations within the breathing zone of an Asbestos Worker.
- AAA. Plasticize: To cover floors, walls and other structural elements of a Work Area with plastic sheeting as herein specified, with all seams securely taped.
- BBB. Removal: All herein specified procedures necessary to remove Asbestos-containing materials from the designated areas and to dispose of these materials at an acceptable site.
- CCC. 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 and suitably arranged for complete showering during decontamination. The Shower Room comprises an airlock between contaminated and clean areas.
- DDD. Surfactant: A chemical wetting agent added to water to improve penetration.
- EEE. TWA₈: Time-weighted average of 8 hours.
- FFF. Vinyl Asbestos Floor Tile: Resilient, semi-flexible floor tile, with asbestos fiber reinforcing.
- GGG. Washroom: A room between the Work Area and the Holding area in the Equipment Decontamination Enclosure System where equipment and waste containers are decontaminated. The Washroom comprises an airlock.

- HHH. Wet Cleaning: The process of eliminating Asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as Asbestos-contaminated waste.
- III. 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 Isolated, Plasticized, and equipped with a Decontamination Enclosure System. An isolated (non-contained) Work Area is a Work Area which is isolated, but has not been Plasticized and may or may not be equipped with a Decontamination Enclosure System.
- JJJ. Worker Decontamination Enclosure System: That portion of a Decontamination Enclosure System designed for controlled passage of Workers, and other personnel and authorized visitors, typically consisting of a Clean Room, a Shower Room, and an Equipment Room.

1.4 QUALITY CONTROL

- A. Safety Compliance: In addition to the detailed requirements of this Specification, comply with laws, ordinances, rules, and regulations of Federal, State, regional, and local authorities and publications regarding handling, storing, transporting, and disposing of Asbestos Waste materials. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the Work. Where the requirements of this Specification and referenced documents vary, the most stringent requirement shall apply. When requirements of reference documents vary, the most stringent requirement shall apply.
- B. CONTRACTOR shall have at least one copy each of 29 CFR 1910.134, 29 CFR 1926.1101, 40 CFR Part 61, Subparts A & B, and all pertinent state and local regulations at both his office and at the job site.
- C. Before the commencement of any Work at the site, the CONTRACTOR shall post bilingual (as appropriate) EPA and OSHA caution signs in and around the Work Area to comply with EPA and OSHA regulations.
- D. Employee exposure monitoring and other monitoring which is required by law or considered necessary by the CONTRACTOR for Worker protection shall be the responsibility of the CONTRACTOR.

1.5 SUBMITTALS AND NOTIFICATIONS

- A. Personnel Training: Submit at the Pre-construction Meeting, (1) declaration certifying that all CONTRACTOR's employees have completed an EPA-approved training course, (2) certificates signed by each employee who will be involved in Asbestos Abatement Work or other work in areas where friable asbestos materials are present, that he or she has had instructions on all health hazards of Asbestos Exposure, Area and Employee Exposure Monitoring, medical surveillance, the increased risk of lung cancer associated with smoking cigarettes and asbestos exposure, has had training in Asbestos Removal asbestos control measures, respirator use, protective clothing, decontamination, emergency procedures, OSHA regulations and understands this instruction, and (3) written procedures for evacuation of injured workers. Those employees that have glovebag technique training shall so indicate on their certificates.
- B. Respirators: Submit at the Pre-construction Meeting, manufacturer's certification that the respirators to be used in this project comply with applicable standards.
- C. Medical Examinations: Submit at the Pre-construction Meeting proof that all persons providing labor and/or professional services who will be entering contaminated areas have had medical examinations. Furnish the results of said examinations to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT at the Pre-construction meeting, prior to that person commencing work on this project, and for each person subsequently providing labor and/or professional services at the job site for whom a medical was not initially furnished.
- D. Product Data: Submit at the Pre-Construction Meeting manufacturer's catalog, samples, and other items needed to demonstrate fully the quality of the proposed materials. Under no circumstance shall proposed materials be used prior to written approval from the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT. The following submittals are required (not necessarily a complete list):
 - 1. Encapsulant
 - 2. Surfactant
 - 3. Protective packaging
 - 4. Labels
- E. Permits: Submit at the Pre-construction Meeting, proof satisfactory to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT that all required permits have been obtained, if applicable.

- F. Waste Transportations: Submit, at the Pre-construction Meeting, the method of transport of Asbestos Waste, including the name, address, EPA ID Number, and telephone number of the Transporter(s).
- G. Asbestos Waste Disposal Site: Submit, at the Pre-construction Meeting, the name, address, EPA ID number, and telephone number of the Waste Disposal Site(s) to be used.
- H. Asbestos Abatement Work Plans: If requested, submit at the Pre-construction Meeting a detailed plan of the Work procedures to be used in the removal of materials containing Asbestos. Such a plan shall include (1) location of Asbestos Work Areas, (2) layout and construction details of Decontamination Enclosure Systems, (3) project schedule including important milestones, critical paths and interface of trades involved in the Work, (4) personal air monitoring procedures, and (5) a detailed description of the method to be employed in order to control pollution including negative air equipment calculations. This plan must be approved in writing by the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT prior to the start of any Asbestos Work.
- I. Exposure Assessment: Submit, at the Pre-Construction Meeting, exposure assessment data in compliance with OSHA 29 CFR 1926.1101, Section (f) for each type of asbestos abatement work required during this project. The assessment data will be available at the work site for the duration of the asbestos abatement work.
- J. Equipment Certification: Submit, at the Pre-construction Meeting, manufacturer's certifications that vacuums, negative air pressure equipment filters, and other local exhaust ventilation equipment conform to ANSI Z9.79.
- K. Rental Equipment: When rental equipment is to be used in removal areas or to transport waste materials, a copy of the written notification provided to the rental company informing them of the intended use of the rented equipment shall be submitted to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT and signed by the rental company.
- L. Notifications: Contact the Ohio EPA at least ten (10) days prior to project commencement. All notifications shall contain as a minimum the following information:
 - 1. Name, address and telephone number of the OWNER including the contact person.
 - 2. Name, address, EPA numbers, license number and telephone number of the CONTRACTOR including the contact person.

3. Address and description of the building, including size, age, and prior use of building.
 4. The type and quantity of friable Asbestos material involved and the description of the Work.
 5. Scheduled starting and completion dates for Abatement Work
 6. Procedures that shall be employed to comply with the regulation.
 7. The name, address, EPA number and the telephone number of the Transporter.
 8. The name and address of the Hazardous Waste Disposal Site where the Asbestos Waste shall be deposited. Copies of all government agency correspondence shall be delivered to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT at the Pre- construction Meeting.
- M. Availability of Plumbing/Electrical contractor: Submit at the Pre-Construction Meeting the name and signed statement from a Professional Electrical and Plumbing contractor who is available to go into containment in case of emergency.
- N. Certificate of Worker's Release: The CONTRACTOR shall have all persons providing labor and professional services at the Project Site sign a Certificate of Worker's Release, prior to commencing work on this project. CONTRACTOR shall furnish such Certificate of Worker's Release for each such person at the Pre-construction Meeting and prior to that person's commencement of Work, and for each person subsequently providing labor and/or professional services at the job site for whom a certificate was not initially furnished.

1.6 ADMINISTRATION OF THE WORK PLAN

- A. All Work is to be performed under the observation of the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT who shall be free to enter and review all Work.

1.7 SAFETY

- A. CONTRACTOR shall notify the local fire department, hospital, and emergency rescue services concerning the nature of the work being performed, the exact locations of the work (address and floors), hours being worked, number of workers per shift, and the estimated start and completion dates.

1.8 TRAINING PROGRAM

- A. CONTRACTOR's employees shall have received training in the proper handling of materials that contain Asbestos, including all aspects of Work procedures and

protective measures, use of protective clothing and respiratory protection, use of showers, entry and exit from Work Areas and OSHA regulations. All workers who are scheduled to use the glove-bag technique must be highly trained, experienced and skilled in this method. Each employee shall also understand the health implications and risks involved, including the illnesses possible from exposure to airborne Asbestos fibers and the increased risk of lung cancer associated with smoking cigarettes and asbestos exposure; understand the use and limits of the respiratory equipment to be used, and understand the purpose of medical surveillance and the monitoring of airborne quantities of Asbestos as related to health and respiratory equipment. The training program shall comply with Federal, State and local regulatory requirements.

- B. Emergency evacuation procedures to be followed in the event of Worker injury shall be included in Worker Training program.

1.9 DRESS AND EQUIPMENT

- A. Work clothes shall consist of fire retardant disposable full-body coveralls, head covers, boots, rubber gloves, or equivalent. Sleeves at wrists and cuffs at ankles shall be secure.
- B. Eye protection and hard hats shall be made available by the CONTRACTOR as appropriate or as required by applicable safety regulations.
- C. CONTRACTOR shall provide Authorized Visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required to enter the Work Area.

1.10 RESPIRATORS

- A. Respiratory protective equipment shall be as required by 29 CFR 1926.58 regulations or local regulations unless specified elsewhere. Respiratory instructions shall be posted in the Clean Room.
- B. If the CONTRACTOR decides to provide respirators other than a Type C continuous flow or pressure-demand, supplied-air respirator, the CONTRACTOR shall determine the exposure of each employee to airborne Asbestos during each type of Work operation. CONTRACTOR shall determine both the ceiling limit and the 8-hour time-weighted average concentration of Asbestos to which each employee will be exposed to during each type of abatement operation.
- C. Compressed air systems shall be designed to provide air volumes and pressures to accommodate respirator manufacturer's specifications. The compressed air

systems shall have a receiver of adequate capacity to allow escape of all respirator wearers from contaminated areas in the event of compressor failure. Compressors must meet the requirements of 29 CFR 1910.134(d) or local regulations. Compressors must have an in-line carbon monoxide monitor, and periodic inspection of the carbon monoxide monitor must be evidenced. Documentation of adequacy of compressed air system/respiratory protection system must be retained on site. This documentation will include a list of compatible components with the maximum number and type of respirators that may be used with the system. Periodic testing of compressed air shall insure that systems provide air of sufficient quality.

- D. When Type C respirators are not required, the CONTRACTOR shall provide Workers with approved, permanently personally issued and marked respirators with changeable filters. The CONTRACTOR shall provide a sufficient quantity of filters approved for Asbestos so that Workers can change filters during the Workday. Filters shall not be used any longer than one (1) Workday. The respirator filters shall be stored at the job site in the Clean Room and shall be totally protected from exposure to Asbestos prior to their use.
- E. Workers shall at all times wear a respirator, properly fitted on the face, in the Work Area, from the initiation of ACM removal until all work is completed and the area has been given written clearance by the ABATEMENT CONSULTANT.
- F. Provide Authorized Visitors with suitable respirators and respirator training whenever they are required to enter the Work Area. Provide at least two (2) extra air hoses when Type C respirators are required.

1.11 MEDICAL EXAMINATIONS AND HISTORIES

- A. Before exposure to airborne asbestos, the CONTRACTOR will provide each employee providing labor or professional services at the Project Site with a comprehensive medical examination as described in 29 CFR 1926.58. No employee will be allowed to enter the Work Area without having first provided a copy of his approved Medical Examination and History to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT. Local medical requirements shall apply if they are more stringent.

1.12 EMPLOYEE IDENTIFICATION

- A. The CONTRACTOR shall furnish an employee roster to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT for each Work shift. Each employee shall bring to the job at least two forms of identification, one of which has his/her photograph.

PART 2 PRODUCTS

2.1 GENERAL

- A. CONTRACTOR shall furnish, provide and utilize the following products in the work as specified.

2.2 PROTECTIVE COVERING (PLASTIC)

- A. Six (6) mil, four (4) mil and two (2) mil polyethylene sheets in sizes to minimize the frequency of joints.

2.3 TAPE

- A. Duct Tape 2" or wider, or equal capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.

2.4 PROTECTIVE PACKAGING

- A. Appropriately labeled two (2) six (6) mil sealable polyethylene bags as a minimum.
- B. For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated - EPA regulation, 40 CFR 61.150 (a)(1)(v), dated November 20, 1990.
- C. Bilingual labels (English and other appropriate language(s) on containment glovebags, waste packages, contaminated material packages and other containers shall be in accordance with EPA or OSHA standards.

2.5 WARNING LABELS AND SIGNS

- A. As required by 29 CFR 1926.58, 40 CFR 61.149 (d)(1)(I),(ii), and (iii) (revised 11/20/90), and other pertinent State and local regulations.

2.6 SURFACTANT

- A. Surfactant, or wetting agent, for amending water will be 50 percent polyoxyethylene polyglycol ester and 50 percent polyoxyethylene ether, or equivalent, at a concentration of one (1) ounce per five (5) gallons of water.

2.7 ENCAPSULANTS

- A. Provide penetrating or bridging type encapsulants specifically designed for application to asbestos-containing materials.
- B. Encapsulants shall be rated as acceptable for use intended when field tested in accordance with ASTM Proposed Specification P-189, "Specification for Encapsulants for Friable Asbestos Containing Building Materials."
- C. Encapsulants shall, when applied according to Manufacturer's instructions, have a class "A" rating by Factory Mutual Research when tested according to ASTM E-84.

2.8 GLOVEBAGS

- A. The glovebag is typically constructed of six (6) mil transparent polyethylene plastic, with two (2) inward-projecting long sleeve rubber gloves, one (1) inward-projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for Asbestos waste. The glovebag removal technique must be used in conjunction with some type of negative-air environment. CONTRACTOR must submit detailed plans for glovebag removals, if applicable.

2.9 TOOLS AND EQUIPMENT

- A. Provide suitable tools for Asbestos removal and encapsulation.
- B. Negative air pressure equipment: High-efficiency particulate air (HEPA) filtration systems shall be equipped with filtration equipment in compliance with ANSI Z9.2-79, local exhaust ventilation. No air movement system or air filtering equipment shall discharge unfiltered air outside the Work Area.
- C. Pressure Differential Monitor: Provide a system to continuously monitor fluctuations in pressure, equipped with an alarm system in the event of loss of pressure differential.

PART 3 EXECUTION

3.1 WORK AREA PREPARATION

- A. Removal of floor tile and mastic using vacuum blast methods in a full containment will be conducted in accordance with all OSHA minimum requirements, as well as the following:
1. All above removal activities shall be executed within a full containment.
 2. CONTRACTOR shall isolate the Work Area for the duration of the project, completely sealing all openings, including but not limited to, HVAC ducts, diffusers and grilles, skylights, doorways and windows, with six (6) mil Polyethylene sheet plastic securely taped to a clean surface. Spray adhesive applied on finished surfaces should be avoided where possible. As an option to isolating an entire room or area, the CONTRACTOR may construct a single layer six (6) mil polyethylene isolation barrier (tent) around the pipe, equipment or debris being worked on.
 3. CONTRACTOR shall construct a Curtained Doorway of clear plastic sheeting, using six (6) mil polyethylene plastic, at entrances and exits to the Work Area. If the isolation option is used, move the construction of the Curtained Doorway from the room entrance to the constructed isolation barrier itself.
 4. HVAC systems shall be shut down if possible.
 5. Provide temporary power and lighting and ensure safe installation of temporary sources and equipment per applicable electrical code requirements. Existing fire/smoke detecting and security alarm systems shall be kept in operation at all times. Where existing fire and smoke detection systems cannot be kept in operation, the CONTRACTOR shall install and maintain a temporary system or alternative acceptable to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT.
 6. The CONTRACTOR shall check regularly all polyethylene isolation barriers for punctures, loose seals, and contact with heat-generating devices, etc. Problem areas shall be repaired or mended immediately.
 7. The CONTRACTOR shall install and maintain Negative Air Pressure Equipment during the removal and decontamination phases of the project until the Clearance Test has passed. Negative pressure of at least .020" water will be maintained and evidenced by a manometer.
 8. Maintain emergency and fire exits from the Work Area, or establish alternative exits satisfactory to fire officials.
 9. Provide temporary emergency lighting with battery back-up power in all Work Areas where none exists. Work Areas with natural lighting and no night work to be performed, are exempt from this requirement.

10. Notify the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT 24 hours in advance of when preparatory steps will be completed. No Abatement activities will begin until the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT authorizes Work.
 11. Asbestos Abatement Work shall not commence until all preparation requirements have been completed, all tools equipment, and materials are on hand and all notices and permits have been obtained.
- B. For removal of flooring tile and mastic using intact methods in a containment:
1. All above removal activities shall be executed within a containment.
 2. CONTRACTOR shall isolate the Work Area for the duration of the project, completely sealing all openings, including but not limited to, HVAC ducts, diffusers and grilles, skylights, doorways and windows, with six (6) mil Polyethylene sheet plastic securely taped to a clean surface. Spray adhesive applied on finished surfaces should be avoided where possible.
 3. CONTRACTOR shall construct a Curtained Doorway of clear plastic sheeting, using six (6) mil polyethylene plastic, at entrances and exits to the Work Area. If the isolation option is used, move the construction of the Curtained Doorway from the room entrance to the constructed isolation barrier itself.
 4. HVAC systems shall be shut down if possible.
 5. Provide temporary power and lighting and ensure safe installation of temporary sources and equipment per applicable electrical code requirements. Existing fire/smoke detecting and security alarm systems shall be kept in operation at all times. Where existing fire and smoke detection systems cannot be kept in operation, the CONTRACTOR shall install and maintain a temporary system or alternative acceptable to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT.
 6. The CONTRACTOR shall check regularly all polyethylene isolation barriers for punctures, loose seals, and contact with heat-generating devices, etc. Problem areas shall be repaired or mended immediately.
 7. The CONTRACTOR shall install and maintain Negative Air Pressure Equipment during the removal and decontamination phases of the project until the Clearance Test has passed.
 8. Maintain emergency and fire exits from the Work Area, or establish alternative exits satisfactory to fire officials.
 9. Provide temporary emergency lighting with battery back-up power in all Work Areas where none exists. Work Areas with natural lighting and no night work to be performed, are exempt from this requirement.
 10. Notify the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT 24 hours in advance of when preparatory steps will be

completed. No Abatement activities will begin until the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT authorizes Work to commence.

11. Asbestos Abatement Work shall not commence until all preparation requirements have been completed, all tools equipment, and materials are on hand and all notices and permits have been obtained.

C. For intact removal of roofing, flashing and tar coating outdoors:

1. All above removal activities shall be executed within a regulated Work Area consisting of tape and signage.
2. Provide temporary power and lighting and ensure safe installation of temporary sources and equipment per applicable electrical code requirements if work is conducted during non daylight hours.
3. The CONTRACTOR shall maintain regulated area during the removal and decontamination phases of the project until the visual inspection has passed.
4. Maintain emergency and fire exits from the Work Area, or establish alternative exits satisfactory to fire officials.
5. Provide temporary emergency lighting with battery back-up power in all Work Areas where none exists. Work Areas with natural lighting and no night work to be performed, are exempt from this requirement.
6. Notify the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT 24 hours in advance of when preparatory steps will be completed. No Abatement activities will begin until the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT authorizes Work to commence.

D. Asbestos Abatement Work shall not commence until all preparation requirements have been completed, all tools equipment, and materials are on hand and all notices and permits have been obtained.

3.2 DECONTAMINATION ENCLOSURE SYSTEMS

- A. Decontamination Enclosure Systems (worker and equipment) General Requirements: Build suitable framing as described herein and as approved by the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT. Portable prefab units, if utilized, must be submitted for review and approval by the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT before start of construction. Submittal shall include, but not be limited to, a floor plan layout showing dimensions, materials, sizes, thicknesses, plumbing, and electrical outlets.

- B. Decontamination Enclosure System for all removal requiring any “full containment” is as follows:
1. Construct a Workers' Decontamination Enclosure System contiguous to or in the near vicinity to the Work Area consisting of three totally enclosed chambers as follows:
 - a. An Equipment Room with an Airlock to the Work Area and a Curtained Doorway to the Shower Room.
 - b. A Shower Room with two Curtained Doorways, one to the Equipment Room and one to the Clean Room. Plastic on Shower Room and adjoining Equipment and Clean Room shall be opaque. The Shower Room shall contain at least one shower with hot and cold water. Careful attention shall be paid to the shower enclosure to ensure against leaking of any kind. Ensure a supply of soap and disposable towels at all times in the Shower Room.
 - c. A Clean Room with one Curtained Doorway into the shower and one entrance or exit to non-contaminated areas of the building. The Clean Room shall have sufficient space for storage of the Workers' street clothes, towels, and other non-contaminated items. Joint use of this space for other functions, such as offices, storage of equipment, materials, or tools, shall be prohibited.
- C. Decontamination Enclosure System for all removal requiring any “containment” is as follows:
1. A single chamber with an airlock at the entrance and exit to the work area for decontamination of respirators and exposed portions of the body with soap and water is required. Workers will HEPA vacuum their suits prior to removal in the chamber, and will damp wipe their respirator and exposed skin prior to leaving the chamber.
- D. Decontamination System for work not requiring any containment as follows:
1. A single six (6) mil polyethylene sheet plastic drop cloth located at the entrance and exit to the work area for decontamination of respirators and exposed portions of the body with soap and water is required. Workers will HEPA vacuum their suits prior to leaving the work area, and will damp wipe their respirator and exposed skin prior to leaving the decontamination area.

3.3 ASBESTOS REMOVAL

- A. Prior to removal, Asbestos materials shall be sprayed with Amended Water. The Asbestos materials shall be sufficiently saturated without causing excessive

- dripping to prevent emission of airborne fibers in excess of 1.0 fibers/cc. Spray materials continuously during the Work process to maintain a wet condition. If the materials are not easily saturated, then the Work Area shall be constantly misted to keep fiber emission minimal.
- B. Asbestos material shall be removed in manageable sections by a multi person team, some of whom are wetting and the remainder removing and cleaning. Any material which falls to the floor shall be wetted and picked up immediately. Material shall not be allowed to dry out. Material drop shall not exceed 15 feet. For heights up to 50 feet, provide inclined chutes or scaffolding to intercept drop. For heights exceeding 50 feet, provide enclosed dust-proof chutes. Before a second area can be started, removed material shall be packed into approved and labeled packaging while it is still wet. The outside of all containers shall be clean before leaving the Work Area. Move containers to the Washroom (Shower Room when Equipment Decontamination System is not required), wet clean each container thoroughly, and move to Holding Area pending removal to uncontaminated areas.
- C. Asbestos material applied to pipes and other nonporous surfaces shall be wet cleaned to a degree that no traces of debris or residue are visible.
- D. Saturate with amended water to prevent emission of airborne fibers. Remove material using intact methods. Disposable material shall be packed into properly labeled protective packaging and removed from the Work Area. Spray the materials repeatedly during the work process to maintain a wet condition. Material should not be allowed to dry out.
- E. Asbestos material debris, drippings, splatters, and overspray on all surfaces with accessible ceiling cavities and other accessible areas, shall be cleaned.
- F. The Work Area shall be kept orderly, clean and clear of Work materials, polyethylene sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the Work Area shall be packed into properly labeled protective packaging and removed from the Work Area.
- G. Protective packages and bagged Asbestos materials shall be cleaned and stored in the isolated Holding Area until that time when the materials are to be loaded and hauled to the Asbestos Waste Disposal Site for burial. The packages and drums shall be stored in piles no higher than four (4) feet nor in a manner that will result in damage to the packages or bags.
- H. Clean surfaces of contaminated equipment thoroughly by wet sponging or wiping before moving such items into the Washroom (Shower Room when Equipment

Decontamination System is not required) for final cleaning and removal to uncontaminated areas. Ensure that personnel do not leave Work Area through the Equipment Decontamination Enclosure.

3.4 DECONTAMINATION OF WORK AREA

- A. For removal work conducted within any containment:
1. The CONTRACTOR shall perform a complete visual inspection of the Work Area to ensure that the Work Area is free of any contamination.
 2. If any evidence of Asbestos material or debris is encountered, the CONTRACTOR shall remove the contaminants and shall wet clean all surfaces within the Work Area to remove Asbestos residue.
 3. Sealed drums, bags, and all equipment used in the Work Area shall be included in the clean-up and shall be removed from the Work Area at the appropriate time in the cleaning sequence.
 4. Upon completion of his visual inspection and any necessary cleaning, the CONTRACTOR shall notify the ABATEMENT CONSULTANT in advance that the Work Area is ready for review.
 5. Upon proper notification, the ABATEMENT CONSULTANT will review the Work Area for general conformance with the Specifications. Any nonconformance of the Work shall be remedied by the CONTRACTOR until the Work Area is in compliance, and at the CONTRACTOR's expense. Reinspection of work areas by the ABATEMENT CONSULTANT, necessitated by incomplete work, shall be at the CONTRACTOR's expense.
 6. Upon successful compliance with the review of the ABATEMENT CONSULTANT and after written notification from the ABATEMENT CONSULTANT, the CONTRACTOR will encapsulate all surfaces where asbestos-containing materials were removed (except finished surfaces that would be ruined by the encapsulant). Apply encapsulant in sufficient amounts to render the affected surface tacky to the touch. The encapsulant shall be rated to safely withstand the temperatures of the surface to which it will be applied.
 7. Upon completion of the Encapsulation Work, the CONTRACTOR shall notify the ABATEMENT CONSULTANT in advance that the encapsulated surfaces are ready for review by the ABATEMENT CONSULTANT.
 8. Upon proper notification, the ABATEMENT CONSULTANT will review the encapsulated surfaces for general conformance with the Specifications. Any non-conformance of the Work shall be remedied by the CONTRACTOR until the Work is in compliance and at the CONTRACTOR's expense.

9. Upon successful compliance with the review of the ABATEMENT CONSULTANT the CONTRACTOR shall notify the ABATEMENT CONSULTANT twenty-four (24) hours in advance that the Work Area is ready for Clearance Testing. Refer to appropriate article in this section on Air Monitoring for Clearance Testing procedures. Clearance testing may be conducted on the same day as the area passed visual inspection by the ABATEMENT CONSULTANT.
 10. Upon written notification from the ABATEMENT CONSULTANT that the Work Area has passed the standard for Clearance Testing, the isolation barriers may be removed by the CONTRACTOR.
- B. For removal work conducted without containment:
1. The CONTRACTOR shall perform a complete visual inspection of the Work Area.
 2. Asbestos debris encountered shall be removed and all surfaces within the Work Area wet cleaned to remove Asbestos residue.
 3. Sealed drums, bags, and all equipment used in the Work Area shall be removed from the Work Area at the appropriate time in the cleaning sequence.
 4. Upon completion of his visual inspection and any necessary cleaning, the CONTRACTOR shall notify the ABATEMENT CONSULTANT that the Work Area is ready for review.
 5. Upon proper notification, the ABATEMENT CONSULTANT will review the Work Area for general conformance with the Specifications. Any non-conformance of the Work shall be remedied by the CONTRACTOR until the Work Area is in compliance, and at the CONTRACTOR's expense. Reinspection of work areas by the ABATEMENT CONSULTANT, necessitated by incomplete work, shall be at the CONTRACTOR's expense.
 6. Upon written notification from the ABATEMENT CONSULTANT that the Work Area has passed the visual inspection, the CONTRACTOR shall proceed with replacement of removed items, if applicable, and the re-establishment of objects and systems as specified in these Specifications.

3.5 ASBESTOS DISPOSAL

- A. Asbestos Waste materials shall be packed into approved, labeled protective packaging per D.O.T. regulations for identification. All Asbestos Waste Material shall be disposed of in at least two (2) six (6) mil polyethylene bags. In addition, the bags shall be labeled according to the revised EPA regulation, 40 CFR 61.150 (a)(1)(v), dated November 20, 1990.

- B. Vehicles used to transport asbestos-containing waste materials are to be marked, during loading and unloading, with the sign prescribed by OSHA to warn people of the presence of asbestos.
- C. Sealed, protective packaging with the required labeling, shall be delivered by the CONTRACTOR to a predesignated waste site for burial.
- D. The asbestos waste shall not be commingled with extremely hazardous material waste such as dioxins, PCB's, waste oils, etc. The asbestos shall be disposed of properly in an EPA approved Sanitary Landfill or in an EPA approved asbestos-only monofill.
- E. Equipment shall be cleaned of Asbestos material prior to being removed from each Work Area.
- F. Containers removed from the Holding Area must be removed by Workers who have entered from uncontaminated areas dressed in clean coveralls. Workers must not enter from uncontaminated areas into the Washroom or the Work Area. Contaminated Workers must not exit the Work Area through the Equipment Decontamination Enclosure System.
- G. The CONTRACTOR shall count the number of bags, containers, etc. loaded out of containment through-out the duration of the project. The total shall be reported to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT at the completion of the project.
- H. CONTRACTOR shall deliver all contaminated materials to the predesignated Waste Disposal Site in accordance with the guidelines of the EPA.
- I. The CONTRACTOR shall notify the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT twenty-four (24) hours in advance of the time when contaminated materials are to be removed from the Site. A copy of the Waste Shipment Record or other document required by State or local agencies, shall be submitted to the Construction Manager and the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT within twenty-four (24) hours of the pick-up.
- J. At the conclusion of Work, the CONTRACTOR shall provide a Waste Shipment Record that the Asbestos material was disposed of at the above EPA approved Waste Disposal Site. The evidence shall be submitted with the final request for payment.

- K. The CONTRACTOR shall be responsible for the safe handling and transportation of all asbestos waste generated by this Contract to the designated EPA approved Waste Disposal Site.

3.6 ASBESTOS WHICH REMAINS

- A. CONTRACTOR shall notify the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT of any and all asbestos which remains in the defined work areas after the completion of the abatement project.

3.7 AIR MONITORING AND TESTING

- A. Area Air Monitoring: **[NOT PART OF WORK]**
 - 1. Periodically during removal, encapsulation, and cleaning operations, area monitoring shall be conducted by the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT. Sampling and analysis shall be done by PCM Method 7400 established by National Institute of Occupational Safety and Health (NIOSH).
 - 2. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT shall report the Area Monitoring results to the CONTRACTOR on the following day. If area monitoring results are unsatisfactory, the CONTRACTOR shall make changes in Work procedures to assure compliance with minimum standards. Unsatisfactory results are fiber counts in excess of maximum acceptable level (0.01 fibers per cubic centimeter [f/cc]).
- B. Personal Air Monitoring by the CONTRACTOR:
 - 1. Monitoring of worker exposures to airborne concentrations of asbestos fibers shall be in accordance with OSHA requirements, and shall be performed as often as is necessary to determine 8-hour time-weighted average exposures and ceiling concentration for workers operating both in and out of the Work Area. Samples shall be collected in the Workers' breathing zones and shall be conducted during each shift, beginning with the first disturbance of the asbestos materials, and until the final clean up is completed.
 - 2. In addition, at least once each eight (8) hour shift the CONTRACTOR will collect a thirty (30) minute personal air sample for the worker who is in the most highly concentrated area of asbestos exposure, during the time of maximum asbestos disturbance activity. The results of this sample analysis must demonstrate that the exposure during this time is below the Excursion Limit as defined by OSHA- 1.0 fiber per cubic centimeter (1.0 f/cc).

3. The CONTRACTOR shall report Personal Monitoring results to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT within 48 hours. Worker exposures to airborne asbestos concentrations shall not exceed the Permissible Exposure Limit (PEL) 8-hour time-weighted average of 0.1 f/cc and shall not exceed the Excursion Limit of 1.0 f/cc averaged over 30 minutes.
- C. Clearance Testing:
1. Contained Work Areas: The CONTRACTOR will not be released until final inspection and air testing are performed using Phase Contrast Microscopy (PCM) and meet required criteria.
 2. Contained Work Area: The ABATEMENT CONSULTANT shall take a minimum of three (3) air sample of 1,200 liters, upon completion of each Work Area when conducting PCM final clearances. These samples will be analyzed by PCM and determined "clean" (each showing equal to or less than 0.01 f/cc) before removal of isolation material from the Work Area.
 3. If the tests show that the Work Area has not met clearance criteria, the CONTRACTOR shall repeat the cleaning and/or encapsulation application until the Work Area is in Compliance.
- D. Bulk Samples:
1. Where exposed material is questionable, an appropriate number of bulk samples will be taken for each homogeneous material and analyzed, using analytical method EPA 40 CFR. Part 763, Section1, Polarized Light Microscopy, to determine if it contains more than one (1) percent asbestos.

3.8 REIMBURSEMENT OF COSTS OF THE OWNER OR THE ABATEMENT CONSULTANT

- A. In the event that reviews and tests show that the Work Area is not decontaminated or if additional time is required to monitor or perform clearance testing as the result of incomplete work by the CONTRACTOR, the ABATEMENT CONSULTANT will record all time used by him and his consultants in reinspection, retesting and additional monitoring of those Work Areas.
- B. Any additional fees incurred by the OWNER or ABATEMENT CONSULTANT as a result of incomplete work by the CONTRACTOR will be deducted from the Contract Fee by way of Deduct Change Orders.

3.9 STOPPING THE WORK

- A. If, at any time, the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT determines that Work Practices are violating pertinent regulations, these Specifications or, in his opinion, endangering Workers or the public, he will contact the OWNER and recommend stopping the work. The OWNER will immediately notify the CONTRACTOR (followed up in writing) that operations shall cease until corrective action is taken. The CONTRACTOR shall take such corrective action before proceeding with the Work. Loss or Damages due to a Stop Work Order shall be borne by the CONTRACTOR.

3.10 PROJECT PUNCH LIST REQUIREMENTS (IF REQUESTED)

- A. The first punch list for the project will be performed after the CONTRACTOR has indicated to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT that they are ready for the final air clearance for the project. The punch list will be prepared by the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT (within 24 hours) and distributed to the CONTRACTOR. If the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT feels that the CONTRACTOR is prepared for the final air clearance, no punch list will be required. In this condition, the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will indicate in writing that the CONTRACTOR will receive a final air clearance test for the project.
- B. The second punch list for the project will occur after the "final clearance" has passed, and prior to the removal of containment. The timing of this punch list will be dependent on the final air clearance results. The purpose of the second punch list is to insure that all ACM has been removed from the project site per the Contract Documents. The list will be developed by the OWNER'S

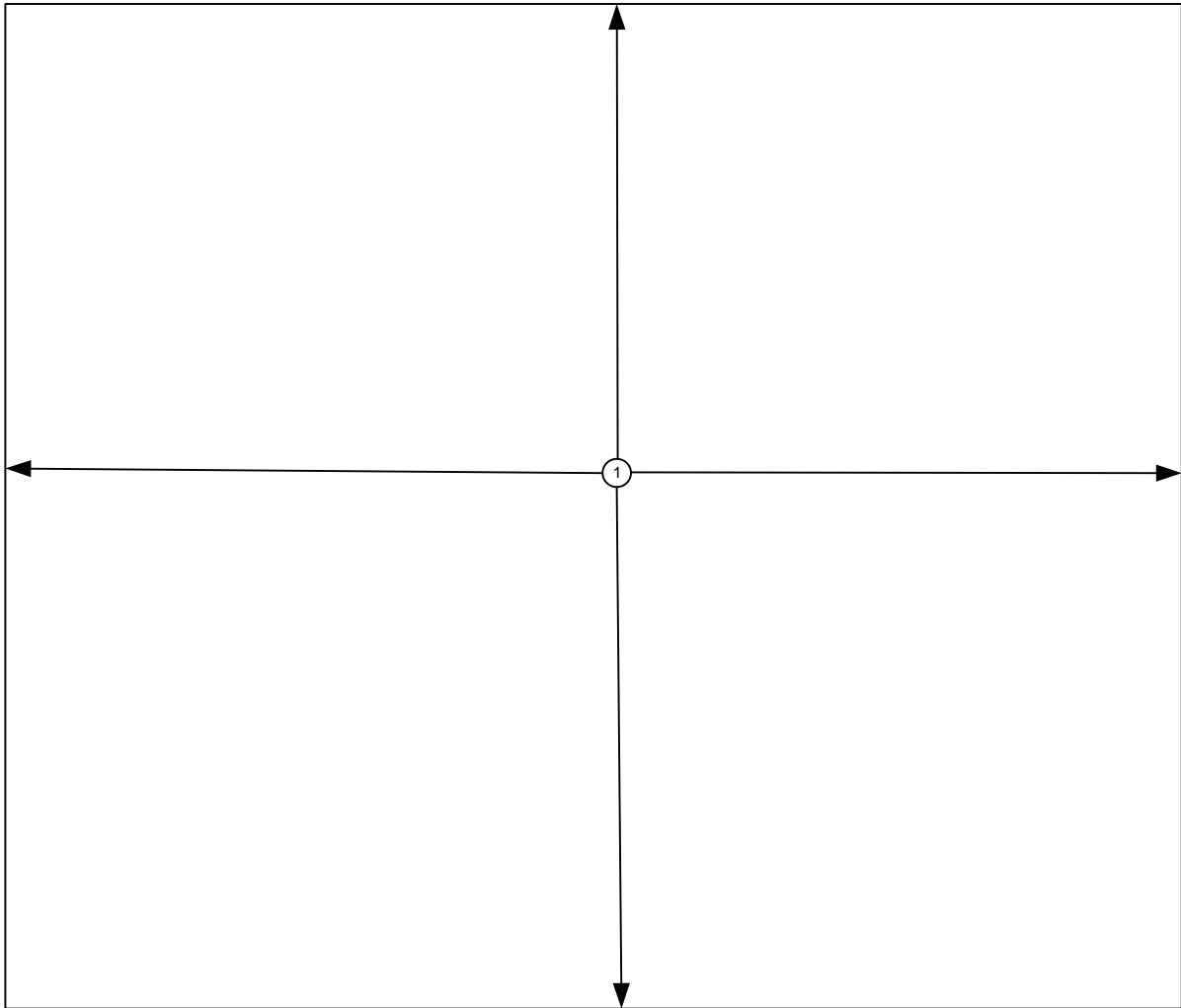
REPRESENTATIVE OR ABATEMENT CONSULTANT. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will distribute the punch list to the CONTRACTOR. If the ACM has been removed in accordance with the Contract Documents, the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT can instruct the CONTRACTOR to proceed with the removal of the containment.

- C. The third punch list for the project will occur after the containment has been removed. The CONTRACTOR will indicate to the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT when they are substantially complete and ready for a punch list. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will provide a punch list for the project (within 24 hours). The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will issue a substantial completion certificate with the punch list. The OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will coordinate, administrate and expedite the completion of the punch list. When all items have been satisfied (field related items and administrative requirements) the OWNER'S REPRESENTATIVE OR ABATEMENT CONSULTANT will issue a final completion certificate to the CONTRACTOR.

3.11 CLEAN UP

- A. CONTRACTOR shall maintain a clean project site during and upon completion of the project. Cleaning shall be in accordance with the General Conditions.

END OF SECTION 028213



SEDIMENTATION BUILDING

LEGEND

- ① ID # for ACM to be abated
- ID** **Description**
- 1 Tar Coating
- 2 Built up roofing
- 3 Roof Flashing
- 4 Floor Tile and Mastic

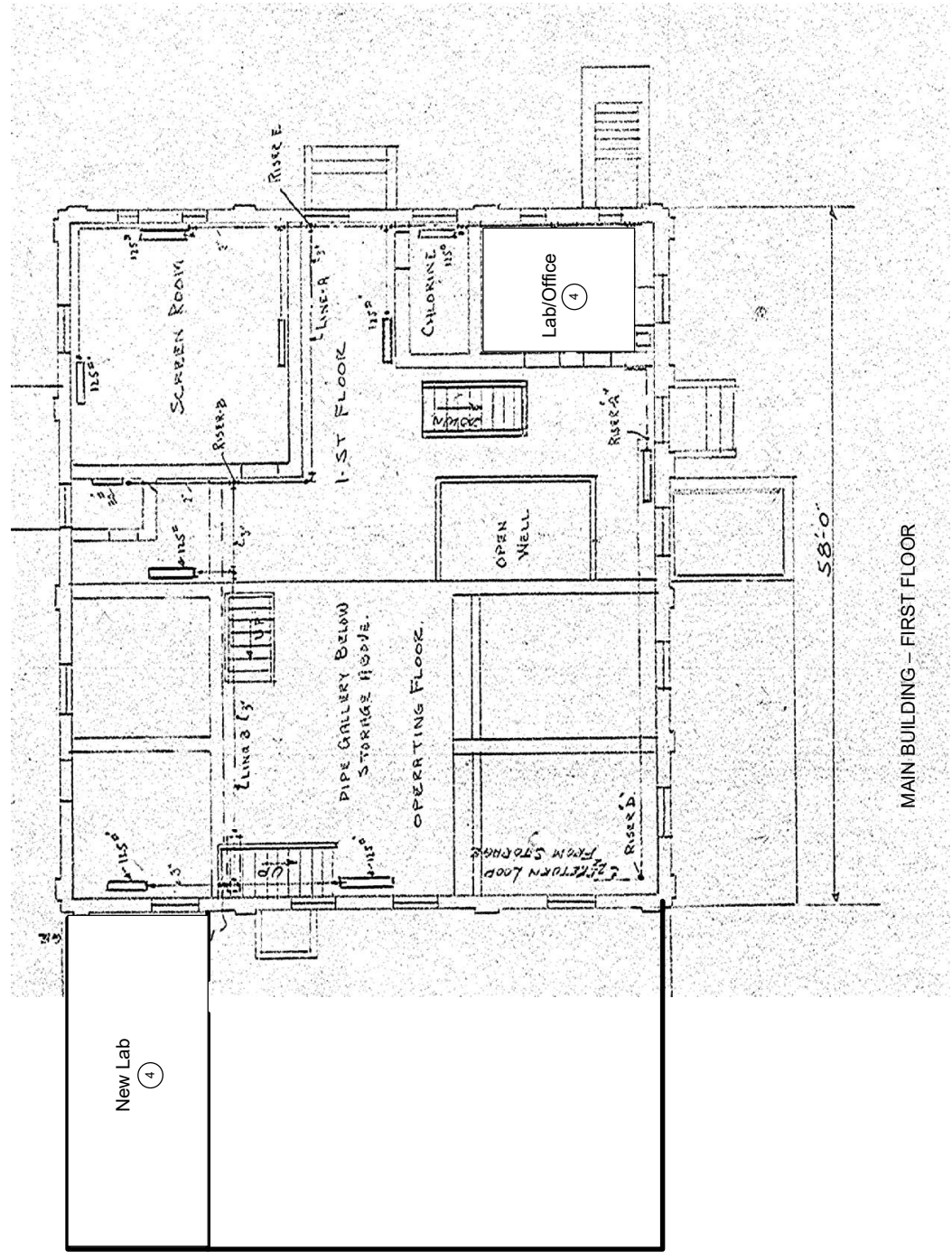


Locations of ACMs to be Abated

Fairport Water Works Plant
5 High Street, Fairport Harbor, Ohio

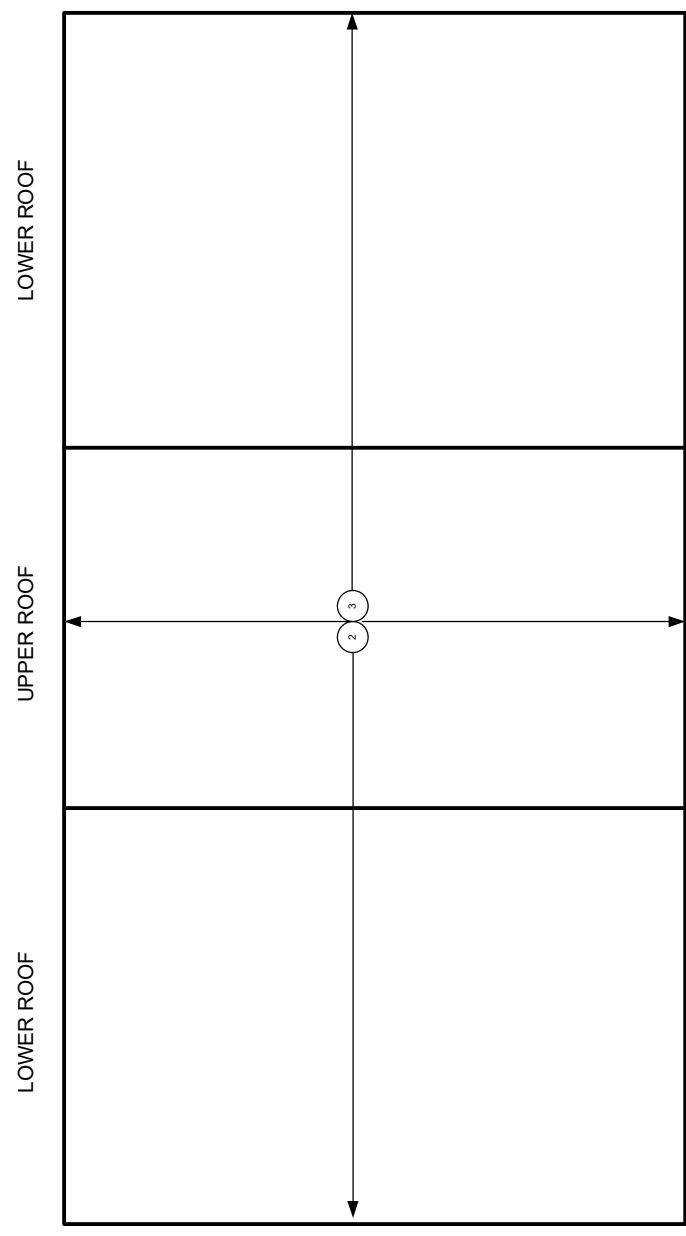
DRAWING FOR GENERAL REFERENCE PURPOSES ONLY.
ACTUAL ROOM CONFIGURATIONS MAY DIFFER FROM THOSE
SHOWN; ANNOTATIONS BY EA GROUP.
REFER TO SURVEY FOR DETAILS. NO SCALE.

EAG No. OH45069	Date: December 2, 2022	Figure 1
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- LEGEND**
- ① ID # for ACM to be abated
 - ID Description
 - 1 Tar Coating
 - 2 Built up roofing
 - 3 Roof Flashing
 - 4 Floor Tile and Mastic

DRAWING FOR GENERAL REFERENCE PURPOSES ONLY.
 BASE PROVIDED BY CLIENT, ACTUAL ROOM CONFIGURATIONS MAY DIFFER FROM THOSE SHOWN; ANNOTATIONS BY EA GROUP.
 REFER TO SURVEY FOR DETAILS.
 NO SCALE.



- LEGEND**
- ① ID # for ACM to be abated
 - ID Description
 - 1 Tar Coating
 - 2 Built up roofing
 - 3 Roof Flashing
 - 4 Floor Tile and Mastic

MAIN BUILDING – ROOF

DRAWING FOR GENERAL REFERENCE PURPOSES ONLY. BASE PROVIDED BY CLIENT; ACTUAL ROOM CONFIGURATIONS MAY DIFFER FROM THOSE SHOWN; ANNOTATIONS BY EA GROUP. REFER TO SURVEY FOR DETAILS. NO SCALE.



Locations of ACMs to be Abated
 Fairport Water Works Plant
 5 High Street, Fairport Harbor, Ohio