

SECTION 020800 - ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The GENERAL CONDITIONS , and DIVISION 1 GENERAL REQUIREMENTS, shall apply as fully as if included herein.

1.2 WORK INCLUDED

- A. The work includes the furnishing of all labor, materials, equipment, insurance and services necessary for and reasonably incidental to the completion of asbestos removal and related work.
- B. Comply with all governing regulations, which the specifications supplement.
- C. Comply with DIVISION 1 GENERAL REQUIREMENT.

1.3 REGULATIONS

- A. All work shall conform to the requirements of the U. S. Environmental Protection Agency (EPA), U. S. Department of Labor - Occupational Safety and Health Administration (OSHA) and applicable State regulations relating to asbestos.
- B. The EPA and OSHA regulations shall be posted at the job site for the duration of the work; posting shall be in a location clearly visible to employees and others in the area.

1.4 DEFINITIONS

- A. Accredited/Accreditation: When referring to a person, Contractor or laboratory, means that such person is accredited in accordance with Section 206 of Title II of the Toxic Substances Control Act (AHERA Regulations).
- B. Aerosol: A system consisting of particles, solid or liquid, suspended in air.
- C. Aggressive Sampling: High-activity level air sampling which results in all settled asbestos remaining airborne and uniformly disturbed through the use of special entrainment and mixing techniques. This makes any settled asbestos fibers accessible to the sampling filters for subsequent detection. The technique is described in 40 C.F.R. 763.90, Appendix A to Subpart E; and Guidance for Controlling ACM in Buildings, Appendix M.

- D. Air Filtration Device (AFD): Air filtration device (AFD) is part of the pressure differential system in which the air is filtered. The AFD is to be equipped with HEPA filters.
- E. Air Monitoring: The process of measuring the fiber content of a specific volume of air. NIOSH Method 7400 or TEM Method in 40 C.F.R. 763, Subpart E, Appendix A, will be used for sampling and analysis.
- F. Amended Water: Water to which a surfactant has been added.
- G. Approve: Where used in conjunction with the QP's response to submittals, requests, applications, inquiries, reports, and claims by the Contractor, "approved" will be held to limitations of QP's responsibilities and duties and does not release the Contractor from responsibilities to fulfill requirements of the Contract Documents. Approved shall also mean consent by U.S. EPA of training programs and the like.
- H. Asbestos: The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite. Both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered to be asbestos.
- I. Asbestos-Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.
- J. Asbestos-Containing Waste Material: Any material, which is or is suspected of being or any material contaminated with an asbestos-containing material, which is to be removed from a Work Area for disposal.
- K. Authorized Visitor: Personnel authorized by the Project Officer, testing lab personnel, or a representative of any Federal, State or local regulatory agency having authority over the project are considered authorized visitors.
- L. Barrier: Any surface that seals off the Work Area to inhibit the movement of fibers.
- M. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.
- N. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.
- O. Certified Industrial Hygienist (CIH): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

- P. Critical Barrier: Two layers of 6 mil polyethylene sheeting on wall or three layers on floor, spray foam, or duct tape used to completely seal off the Work Area to prevent spread of fibers to surrounding areas.
- Q. Decontamination (Decon) Area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower room and a clean room which is used for the decontamination of workers, materials and certain equipment contaminated with asbestos. This shall serve as the only entrance or exist to the Work Area.
- R. Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.
- S. Disposal Bag: A 6-mil thick, leak-proof polyethylene bag used for transporting asbestos waste from the work area to the disposal site. Each is labeled in compliance with OSHA 1926.1101 as follows:

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

And U.S. DOT ORM-E label for Asbestos-Hazardous Material (including Asbestos Waste Manifest) and statements as required.

- T. Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent release of fibers.
- U. Bridging Encapsulant: An encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
- V. Penetrating Encapsulant: An encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
- W. Removal Encapsulant: A penetrating encapsulant specifically designed for removal of asbestos-containing materials rather than for in situ encapsulation.
- X. Encapsulation: Treatment of ACM with an encapsulant.
- Y. Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.
- Z. Filter: A media component used in respirators to remove solid or liquid particles from the respired air.

- AA. Friable Asbestos Material: Material that contains more than 1.0% asbestos by Polarized Light Microscopy (PLM), and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. This includes previously non-friable material which becomes damaged to the extent that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure.
- BB. Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- CC. General Supervisor: Site Superintendent, Foreman: is the Contractor's representative at the work site. This person can be the Competent Person required by OSHA, 29 C.F.R. 1926.1101.
- DD. Glovebag: A sack (typically constructed to 6 mil transparent polyethylene) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.
- EE. HEPA Filter: A high efficiency particular air (HEPA) filter that removes from air 99.97% or more of monodispersed dioctylphthalate (DOP) or dioctylsebacate (DOS) particles having a mean particle diameter of 0.3 microns.
- FF. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): HEPA filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be 99.97% efficiency for retaining fibers of 0.3 microns or larger.
- GG. Indicated: The term "Indicated" is a cross-reference for Notes or Schedules on Drawings, to other paragraphs or Schedules in the Specifications, and to similar means of recording requirements in Contract Documents.
- HH. Install: Unless defined in greater detail, "install" is used to describe operations at the project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working on dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
- II. Installer: The "installer" is defined as the entity (person or firm) engaged by the Contractor or Sub-Contractor to perform a particular trade at the work site, including installation, erection, application and similar required operations. Such entities (installers) shall be expert in operations they perform.
- JJ. Landfill Receipt: Document signed by a landfill operator acknowledging the receipt of ACM waste.
- KK. Manifest: A document detailing chain of custody for ACM waste hauled.

- LL. Negative Pressure Glovebag: A glovebag that is composed of flexible plastic that can be subjected to negative pressure without collapsing.
- MM. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.
- NN. Permissible Exposure Limit (PEL): The Contractor shall ensure that no employee is exposed to an airborne fiber concentration of asbestos in excess of the PEL expressed as an 8-hour TWA as determined by the OSHA Reference Method of 29 C.F.R. 1926.1101 (Current PEL for asbestos is 0.1 fiber/cc.).
- OO. Personal Sampling Monitoring: Air samples taken in the breathing zone of workers as required by OSHA 29 C.F.R. 1926.1101.
- PP. Pressure Differential: Air pressure lower than surrounding areas, caused by exhausting air from a sealed space (Work Area).
- QQ. Pressure Differential System: A local exhaust system, utilizing HEPA filtration, capable of maintaining a pressure differential inside the Work Area and a constant airflow from adjacent areas into the Work Area and exhausting that filtered air outside the Work Area.
- RR. Project Manager (Contractor): The asbestos Contractor's employee responsible for the total oversight of the project.
- SS. Project Officer: The State employee responsible for overall contract administration.
- TT. Plasticize: Means to cover floors and walls with polyethylene sheeting as herein specified and in accordance with the temporary Enclosure Section.
- UU. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
- VV. Provide: Except as otherwise defined in greater detail, the term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- WW. Qualified Person (QP): A Registered Architect, Professional Engineer, or Certified Industrial Hygienist who has successfully completed training and is therefore accredited under a legitimate State Model Accreditation Plan as described in 40 CFR 763 as a Building Inspector, Management Planner,

Project Monitor, and Asbestos Project Designer. The QP must be qualified to perform visual inspections as indicated in ASTM E 1368. The QP shall be appropriately licensed in the State of Virginia as a Project Monitor and Project Designer.

- XX. Regulated ACM: Means friable ACM, non-friable ACM that has become friable, non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading or non-friable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the ACM during renovation or demolition.
- YY. Regulated Area: An area where asbestos removal operations are performed which is isolated by physical boundaries to prevent entry of unauthorized persons or the spread of asbestos dust, fibers or debris. Within this area, the airborne concentration of asbestos could reasonably be expected to exceed the PEL.
- ZZ. Removal: The taking out or stripping of all ACM from a damaged area or associated area or space.
- AAA. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
- BBB. Short-Term Exposure Limit (STEL): A "ceiling" concentration, identified in OSHA regulations, of an airborne substance that shall not be exceeded for a duration of any 30-minute period (Current STEL for asbestos is 1.0 fiber/cc.).
- CCC. Submittal: Items that is required to be presented to the Project Officer and/or the QP for review, consideration or decision.
- DDD. Surfacing Material: Material in a building that is sprayed-on, trowelled-on or otherwise applied to surfaces or structural members for acoustical, fireproofing or other purposes.
- EEE. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- FFF. Testing Laboratory: The "testing laboratory" is an independent entity to perform specific air sampling and analysis at the work site and associated areas, to report and (if required) interpret results. Analysis shall be performed by a laboratory accredited by the American Industrial Hygiene Association (AIHA) and having demonstrated a proficient rating in AIHA's

Proficiency Analytical Testing (PAT) Program. The laboratory shall be licensed by the Virginia Department of Commerce as an Asbestos Analytical Laboratory. The laboratory shall also be accredited by the National Institute of Standards and Technology (NIST) through the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk sample analysis and air sample analysis by TEM (TEM Method of 40 C.F.R. 763, Subpart E, Appendix A).

- GGG. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.
- HHH. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed water vapor.
- III. Waste Shipment Record: Means the original shipping document, originated and signed by the waste generator (Abatement Contractor) used to track and substantiate the disposal of ACM waste as described in 40 CFR Part 61.
- JJJ. Waste Generator: Means the licensed Asbestos Abatement Contractor removing ACM waste from the property.
- KKK. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-containing waste.
- LLL. Work Area: The area where asbestos-related work or removal operations are performed; the Work Area is defined and/or isolated to prevent the spread of asbestos dust, fibers, or debris, and entry by unauthorized personnel. The Work Area is a Regulated Area as defined by 29 C.F.R. 1926.1101.
- MMM. Work Site: The term "work site" is defined as the space available to the Contractor for performance of the work either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on the Drawings, and may or may not be identical with the description of land upon which the project is to be built.
- NNN. Negative Pressure Enclosure: Pressure differential of a minimum of -0.02 column inches of water as related to outside pressure. Utilization of a manometer shall be use as evidence.

ABBREVIATIONS AND NAMES:

The following acronyms or abbreviations referenced in Contract Documents are defined to mean the associated names. Both names and addresses are subject to change and are

believed to be, but are not assured to be, accurate and up-to-date as of the date of the Contract Documents:

ACM	Asbestos Containing Material
AIA	American Institute of Architects 1735 New York Avenue, N.W. Washington, DC. 20006 (202) 626-7474
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018 (212) 354-3300
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103 (215) 299-5400
CFR	Code of Federal Regulations Available from Government Printing Office Washington, DC. 20402 (Usually first Published in Federal Register)
EPA	Environmental Protection Agency 401 M Street, SW Washington, DC. 20460 (202) 382-3949
f/cc	fibers per cubic centimeter
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Gaithersburg, MD 20234 (301) 921-1000
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) Government Printing Office Washington, DC. 20402

TEM	Transmission Electron Microscopy
VA DPOR	Virginia Department of Professional and Occupational Regulation 3600 West Broad Street Richmond, Virginia 23230-4917 (804) 367-8500
UL	Underwriters Laboratories 333 Pfinningsten Road Northbrook, IL 60062

1.5 INFORMATION TO BE SUBMITTED AFTER CONTRACT IS AWARDED

- A. Immediately upon award of the Contract, and before any work is commenced, contractor shall submit for information of the Owner and Engineer the data listed below, and shall be in quantity to allow the Owner to retain two copies and the Engineer to retain one copy. The data shall show compliance with the requirements of the Contract Documents and governing regulations.
- 1) Method and means of removal and encapsulation of asbestos-containing materials.
 - 2) Containment and shrouding procedures, including any unusual conditions.
 - 3) Air sampling plan.
 - 4) Name of laboratory to be used in air sample analysis and copy of American Industrial Hygiene Association (AIHA) Accreditation.
 - 5) Location of change and decontamination area.
 - 6) Location of landfill for disposal of asbestos waste that has been approved by EPA.
 - 7) Manufacturer's technical data sheets on proposed surfactant, encapsulant, mastic removers, etc.
 - 8) Certificate of Insurance with notarized statement thereon that all requirements stated in paragraphs 13 (a) through 13 (d) are covered.
 - 9) Copies of Asbestos Worker's License and Asbestos Supervisors License.

- 10) Notifications to all appropriate state and federal agencies and local fire and police departments.

1.6 SCOPE OF WORK

A. The Scope of Work includes, but is not necessarily limited, to the following:

- 1) The Abatement Contractor shall be responsible for removal of all asbestos-containing materials impacted by this project. These materials include but not limited to asbestos steam line insulation and associated pipe elbow.
- 2) The Abatement Contractor has the responsibility for determining actual quantities of materials to be removed and reviewing the scope of work. The Contractor should allow under their base bid for the removal of all materials as described in the survey report and/or referenced in this specification.
- 3) All mobilizations and permit notifications shall be the Abatement Contractors responsibility.
- 4) This section includes all work necessary to reduce air concentrations of asbestos to the specified level and maintain the specified asbestos control limits during the life of the contract. It also contains removal, containment, and disposal of asbestos-containing materials. The work specified in this document consists of the provision of services for the removal and disposal of asbestos-containing building materials (ACBMs). Asbestos materials have been identified in the areas where work will be performed.
- 5) All asbestos abatement work will be performed by competent, licensed trained persons, qualified, and knowledgeable in the techniques of abatement, handling, and disposal of ACBMs and materials contaminated by asbestos, in accordance with pertinent local, state, and federal regulations.
- 6) The Abatement Contractor shall remove the following materials:
 - a) Remove 12" x 12" beige and tan floor tile and associated black mastic, stone pattern linoleum flooring located throughout the house. The Contractor shall remove these materials within negative pressure enclosure (minimum neg. pressure 0.02" w.g.). **The contractor shall also be responsible for removal of multiple layers of flooring and mastic. Where tile is present under carpets and linoleum flooring, the Contractor shall be responsible for removal of carpet also. If the carpet and non-asbestos containing linoleum can be removed without disturbance of the floor tile, the carpet**

and linoleum may be disposed of as non-asbestos waste. The Contractor shall also be responsible for removal of flooring and mastic under all partition walls, fixtures, cabinets, carpets, etc. As part of the base bid the contractor shall assume a minimum two layers of floor tile and/or linoleum flooring will be removed. The contractor shall coordinate demolition to access these materials (if required) with the Owner and the general contractors on-site.

- b) Remove drywall and joint compound located throughout the DC Moultrie Courthouse, which will be disturbed during renovations. Note: The Abatement contractor shall remove these materials within negative pressure containment as described in Part 3 – Execution of this document. All attachments to the drywall shall also be assumed to be contaminated and disposed of as asbestos.
- c) Remove pipe mastic/sealant located throughout the DC Moultrie Courthouse, which will be disturbed during renovations. The Abatement contractor shall remove these materials within negative pressure containment where feasible or glovebag (if not) as described in Part 3 – Execution of this document. If the contractor elects to perform glovebag removal, the Abatement contractor shall place a micro-trap near the glovebag removal area.
- d) Remove metal duct and fiber glass duct run mastic/sealant located throughout the DC Moultrie Courthouse, which will be disturbed during renovations. For the purpose of the bid, the Abatement contractor shall assume that each duct run has mastic/sealant every 3-4 feet. The Abatement contractor shall remove these materials within negative pressure containment where feasible or glovebag (if not) as described in Part 3 – Execution of this document. If the contractor elects to perform glovebag removal, the Abatement contractor shall place a micro-trap near the glovebag removal area.

NOTE: The Abatement Contractor shall pre-clean all the areas that asbestos containing materials will be removed. All surfaces shall be HEPA vacuumed and wet wiped.

7) Unit Costs

As part of the base bid, the Abatement Contractor shall perform limited floor, wall and ceiling demolition throughout the proposed renovation area of the project site in coordination with general architectural, plumbing, electrical, mechanical work to adequately expose piping and/or any other materials that may contain asbestos for inspection.

The QP shall conduct asbestos testing of suspect pipe insulation materials and/or any other materials discovered during this renovation and demolition. The Contractor's scope of work shall be adjusted accordingly based on the results of testing if additional materials are uncovered. The Abatement Contractor shall submit unit cost estimates for the following items. The Abatement Contractor shall remove and dispose of ACM's for these unit costs if ACM's in areas not previously specified are discovered

- 1) Removal of asbestos-containing pipe mastic/sealant less or equal than 12" O.D. within negative pressure containment, per linear foot.
- 2) Removal of asbestos-containing pipe mastic/sealant less or equal than 12" O.D. utilizing glovebag method, per linear foot.
- 3) Removal of asbestos-containing pipe mastic/sealant greater than 12" O.D. within negative pressure containment, per linear foot.
- 4) Removal of asbestos-containing pipe mastic/sealant greater than 12" O.D. utilizing glovebag method, per linear foot.
- 5) Removal of asbestos-containing duct mastic on metal duct and fiberglass insulation, per linear foot.
- 6) Removal of asbestos-containing flooring materials (including floor tiles, vinyl sheeting, and carpet/linoleum (if not separated) within a reduced negative pressure containment, per square foot.
- 7) Removal of presumed asbestos-containing fire doors, per door.
- 8) Removal of asbestos-containing drywall/joint compound within negative pressure containment, per square foot.
- 9) Removal of presumed asbestos-containing vapor barrier behind limestone or CMU block, per square foot.
- 10) Removal of presumed asbestos-containing window caulking, per window.

Note 1: During the performance of the project, the contractor will be subject to inspection by the owner's representative. If the contractor is found not in compliance with the project specifications, the contractor will stop all work immediately to resolve the violation. Standby time shall be at the contractor's expense.

Note 2: Following completion of work, the owner's representative shall visually verify that all ACMs scheduled for removal have been

removed and that the containments are clean and ready for re-occupancy.

Note 3: The Abatement Contractor shall coordinate with the Mechanical, Electrical, Plumbing, and General Contractors to ensure that all appropriate systems that will be impacted by demolition have been properly decommissioned prior to the start of any work.

Note 4: The Abatement Contractor shall coordinate with the General Contractor selected for this project to verify that the structure will support the planned activities and comply with local building codes and OSHA requirements.

Note 5: During demolition, no visible emissions of dust are allowed. The Contractor must use dust control measures (i.e., water) during demolition.

1.7 QUALITY CONTROLS

- A. The asbestos removal Contractor's superintendent shall be on the job each day during removal and he shall be knowledgeable, experienced and competent in this type of work.
- B. The asbestos removal Contractor shall be responsible for any damage to the building and its contents resulting from leakage or spillage of water.
- C. Authorities of the District of Columbia shall be notified of the starting date of the asbestos removal project by the asbestos removal Contractor.
- D. The Owner reserves the right to halt the project work until hazardous or potentially hazardous conditions are corrected.
- E. The Owner reserves the right to independently perform such analysis and tests at any time as he deems necessary to ensure and protect safety of the project.

1.8 WORKER PROTECTION - ASBESTOS REMOVAL PROCEDURES & EQUIPMENT

- A. Comply with all EPA and OSHA Regulations, and follow EPA workplace guidelines.
- B. Provide and maintain negative air systems for all work areas, for the duration of asbestos removal work.
- C. Submit certificates signed by each employee indicating that the employee has received approved training and is currently licensed in properly handling of materials that contain asbestos.

- D. All workers shall be instructed in and be knowledgeable of the following:
 - 1) The hazards of asbestos exposure.
 - 2) Use of respirators and protective clothing.
 - 3) Use of personal air monitoring equipment.
 - 4) Use of decontamination facilities and designated showers.
- E. Respiratory Equipment and Air Sampling Requirements
 - 1) Provide workers with respiratory equipment in accordance with OSHA 1910.134, as suitable for the asbestos exposure in the work area.
 - 2) Provide sufficient filters for replacement of disposable type filters.
- F. Provide a copy of written respirator program on the job site at all times.
- G. Personnel breathing zone samples shall be made by the asbestos removal Contractor on a daily basis for determination of both 8-hour time weighted average (TWA) and ceiling concentrations of employee exposures.
- H. The sampling schedule shall be posted outside of the containment area showing sample frequency, duration of the sample, and pump flow rates.
- I. Results of all samples shall be posted within 24 hours of sampling outside of the containment area, and maintained there until the job has been concluded. This data shall include both the results of individual samples and the results of 8-hour TWA determinations. Posted results should include a synopsis of work activities of which the results are representative.

1.9 AIR MONITORING

- A. Provide air monitoring in the work areas throughout all asbestos stripping, removal and cleaning operations to ensure that the workers are adequately protected at all times. All personal air monitoring for OSHA compliance shall be the responsibility of the Contractor.
- B. Samples for air monitoring shall be collected by a competent person in accordance with methods prescribed in Chapter X of the Federal OSHA Industrial Hygiene Field Operations Manual or by equivalent procedures.
- C. Air monitoring shall be in compliance with 1910.1001 (f) of the OSHA standards.

- D. Air samples must be analyzed by NIOSH method 7400 by a laboratory accredited by AIHA.
- E. Air monitoring (protection of the Contractor's employees) shall be provided throughout the removal and cleaning operations. Air monitoring shall be conducted and evaluated by a testing laboratory employed by the asbestos removal Contractor to ensure that the Contractor is complying with applicable EPA and OSHA regulations.
- F. Environmental samples outside of containment and clearance sampling shall be performed by the QP (Froehling & Robertson, Inc.).
- G. Area samples shall be collected outside the containment in areas of highest risk of contamination.
- H. Samples shall be made on a daily basis outside the containment.
- I. All analytical results shall be presented as signed "Certificates of Analysis". Form shall state:
 - Date and time sampling began.
 - Flow rate of samples.
 - Sampling time elapsed.
 - Concentration of fibers.
 - Site/individual sampled.
 - Signature of Analyst.
- J. Two copies of analytical results shall be delivered in writing to the job site within 24 hours of sample collection (excluding non-working days).
- K. Sampling schedules for area samples shall be posted outside the containment area showing sampling frequency, sample duration, and pump flow rates.
- L. Results of area samples made outside the containment shall be posted within 24 hours and maintained in the area showing the fiber concentrations. Posted results should include a synopsis of the days activities of which the samples are representative.
- M. The Owner shall be informed immediately of any area samples outside the containment with results in excess of 0.1 fibers/cc.
- N. Copies of the results of all samples made in areas where Owner's employees are or may be exposed shall be given to the Owner to assure maintenance of records in compliance with OSHA standard 1910.1001 (i) (1).
- O. Operations shall be discontinued immediately at any time visible emissions are observed emanating from the containment.

PART 2 - PRODUCTS

2.1 PRODUCTS AND EQUIPMENT

- A. Protective plastic (polyethylene) sheeting of minimum 6-mil thickness and size to provide protection to all equipment, floors, walls, piping, ductwork, and all other exposed areas, with minimum frequency of joints.
- B. Seal tape shall be glass fiber or other type capable of sealing joints of adequate sheets of plastic for the attachment of plastic sheeting to finished or unfinished surfaces of dissimilar materials under either dry or wet conditions, including use of amended water.
- C. Disposal Containers: Bags and drums to be used for disposal of asbestos waste shall be suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an EPA approved and certified waste disposal site. Bags shall be 6 mil thickness.
- D. Warning Labels: As required by OSHA Regulation 29 CFR 1910.1001 (g) (2).
- E. Surfactant (wetting agent for amended water): Acceptable surfactant.
- F. Encapsulant: Acceptable encapsulant

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set up a regulated area around the windows to be removed and or repaired.
- B. Isolate the window work areas for the duration of the work by completely sealing off all openings and fixtures from the interior of the building with plastic sheeting taped and glued securely.
- C. Working from the exterior of the building, cover the ground with plastic sheeting sealed with tape and glue securely. Use a minimum of two layers of 6-mil plastic sheeting on the ground. Cover the ground a minimum of ten feet from the wall.
- D. Contractor shall provide the decontamination rooms prior to start of work within the work areas. Personnel lockers in the Clean Room and facilities for disposal of contaminated clothing in the Equipment Room shall be provided. Egress openings shall consist of two sheets of plastic taped across the opening head and down opposite jambs, one leaf shall be taped on one side of the jamb, the other on the opposite jamb.

- E. Maintain enclosures in tidy conditions. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning and end of each work period.
- F. Post the EPA and OSHA regulations or any applicable state and local government regulations at the job site in locations clearly visible to employees and others. Attention is directed to all requirements of the Contract Documents concerning precautionary procedures mandated thereby and by OSHA and EPA for the protection of personnel, the public, and the environment from exposure to or possible contamination by asbestos fibers.
- G. In addition to requirements for asbestos protection, comply with all other applicable requirements of 29 CFR 1910 and 1926.
- H. Provide hard hats, eye protection, and foot protection in those areas where such protective measures are required by OSHA regulations.
- I. Workers shall always wear a respirator properly fitted on the face while in the work area. Instruct and train workers to use respirators properly in accordance with the requirements of the American National Standards Practices for Respiratory Protection (ANSI Z88.2-1969). Ensure that workers wear the appropriate respirator at all times while in the work area. Each employee shall be tested for respirator fit in accordance with the cited ANSI standard.
- J. Workers shall wear disposable full body coveralls and disposable head and foot coverings in the work area. If non-disposable footwear such as protective shoes are required and disposal foot coverings are not suitable, the non-disposable protective footwear shall be left in the work area at all times until disposal at job completion, then disposed of as asbestos contaminated waste.
- K. The Contractor shall establish decontamination procedures for each work area. All persons without exception shall pass through these decontamination areas for any purpose. Procedures shall, as a minimum, consist of the following:
 - 1) Outside Clean room Area: In this room, the worker or individual shall remove normal street clothing and replace with clean work clothing, including disposable coveralls, respiratory protective equipment, and all other protective gear. No asbestos contaminated items shall enter this room with the exception of reusable respirators, which are to be placed in a bin, or other suitable receptacle approved by the Contractor's technical representative. Provide suitable lockers or other secure storage areas for the employee's clothing.

- 2) Equipment Room: Provide an area in which work equipment, footwear and contaminated work clothing can be placed in suitable receptacles for reuse or disposal prior to entry into the shower room and thence to the outside clean room.
- 3) Decontamination Procedures: Submit to the Owner, a protection program to ensure that workers and others follow an established decontamination sequence utilizing the aforementioned facilities. They shall ensure that gross contamination and debris is removed from protective clothing and equipment prior to egress from the work area. Respiratory protective equipment shall be removed last, to prevent inhalation of fibers during removal of contaminated clothing. The Contractor shall provide a plan for receipt, inspection, cleaning and storage of respiratory protective equipment in such a manner as to avoid contamination of clean areas.

3.2 METHOD OF REMOVAL FOR ENCLOSED WORK AREAS

- A. A low-pressure fine spray of amended water shall be applied to reduce fiber release preceding removal. The asbestos shall be saturated sufficiently to retard emission of airborne fibers. If the asbestos is thick and detaches in chunks having dry bottoms, amended water shall be sprayed over the material as it is loosened and removed.
- B. Following removal of asbestos-containing material, all plastic sheeting, tape, cleaning material, clothing and all other disposal materials or items used in the work area shall be packed into sealable plastic bags (6 mil minimum), sealed and placed into metal or fiber containers or skips for transport. The containers or skips shall be labeled as prescribed by OSHA Specifications 29 CFR 1910.1001 (g).
- C. All containers shall be cleaned and thoroughly decontaminated before leaving the work area by being passed through the shower, or through the airlock and container cleaning assembly, as follows:
 - 1) Containers shall first be gross-cleaned by vacuuming and then damp-wiped, before being placed into shower container or cleaning airlock.
 - 2) If a container being transferred from the work area via a shower has dried, it shall be wet-wiped again before being transferred past the shower.
- D. Transport the sealed container or skips to an EPA approved and certified waste disposal site. The Contractor shall provide the Owner with a signed certificate listing the quantity of materials delivered to the disposal site, a description of the location of the site, and a statement attesting to the fact that the site is an EPA and State approved disposal location. The signatures of the asbestos removal Contractor, transporter, and site operator must

appear on the certificate. The Contractor shall ensure that the operator leaves damaged bags in the delivery containers and that the entire contaminated container is buried, however, sealed plastic bags may be dumped from the containers into the burial site and uncontaminated containers may be reused. The Contractor shall certify that any reused containers have not contained damaged or broken bags of asbestos or other asbestos-contaminated material.

- E. Disposal of all asbestos waste shall be at a prearranged disposal site in accordance with regulations of the Virginia Department of Environmental Quality-Waste Division and OSHA Regulation 29 C.F.R. 1910.1001.

3.3 DECONTAMINATION OF WORK AREA

- A. Clean all surfaces of the Work Area, including the outside surface of critical barrier sheeting, tools, scaffolding and/or staging, by HEPA-filtered vacuuming, then damp cleaning and mopping. Do not dry-dust or dry-sweep. Continue cleaning until there is no visible dust, debris or residue on polyethylene sheeting and other surfaces.
- B. Perform a complete visual inspection of all Work Area surfaces and contents. If any debris or residue is found, repeat the first cleaning and continue decontamination procedure from that point.
- C. Allow sufficient time for the Work Area to completely dry.
- D. The QP shall conduct a visual inspection of the Work Area when the abatement and decontamination is complete and when the Contractor's supervisor requests such inspection.
- E. After the visual inspection, an approved lock down encapsulant shall be applied to all the surfaces in the Work Area. The encapsulant used shall not impede window replacement or repair. After sufficient drying time, determined by the QP, the final clearance can take place.
- F. Additional cleaning required after the first final cleaning will be performed at the expense of the contractor. Additional hours required by the QP will also be an expense paid for by the Contractor, as well as necessary repeat final air clearance analyses.
- G. After final air samples are found to meet clearance criteria, remove critical barriers and completely dismantle and remove Decontamination Area.

3.4 FINAL INSPECTION AND TESTING.

- A. After cleaning and decontamination of the workspace has been conducted, and if a high degree of cleanliness has been achieved, notify the QP that the workspace is ready for inspection and final testing. The QP will visually

inspect each Work Area where such activity was conducted to determine whether the clean up has been properly completed and to detect any visible asbestos dust or contamination. The QP shall conduct a visual inspection of the Work Area when the abatement and decontamination is complete and when the Contractor's supervisor requests such inspection. The visual inspection will be conducted in compliance with ASTM E 1368-90, Standard Practice for Visual Inspection of Asbestos Abatement Projects.

- B. If the visual inspection does not reveal any dust or other signs of contamination, the final air monitoring will take place.
- C. Final air clearance testing shall be conducted by the QP using air sampling techniques in the Work Area in accordance with EPA 40 C.F.R. Part 763.90(i), (2, i) and Appendix A.
- D. Phase contrast microscopy analysis will be performed in accordance with NIOSH Method 7400. Final test results shall show contamination levels not to exceed 0.01 f/cc when using phase contrast microscopy (PCM). Air samples shall have a minimum volume of 1,200 liters per sample but may vary depending on size of Work Area and other variables.
- E. If elevated airborne fiber counts are detected on clearance samples, the Contractor will be responsible for re-cleaning of the sampled area(s) at no additional cost or schedule impact to Owner. Additional testing will be performed following the re-cleaning to document that acceptable levels have been achieved. The Contractor will be responsible for fees and expenses related to retesting the area after re-cleaning.

-- End of Section --

SECTION 020820 – LEAD IN CONSTRUCTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2 (1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z88.2 (1992) Respiratory Protection

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1926.21 Safety Training and Education

29 CFR 1926.33 Accesses to Employee Exposure and Medical Records

29 CFR 1926.55 Gases, Vapors, Fumes, Dusts, and Mists

29 CFR 1926.59 Hazard Communications

29 CFR 1926.62 Lead Exposures in Construction

29 CFR 1926.65 Hazardous Waste Operations and Emergency Response

29 CFR 1926.103 Respiratory Protections

40 CFR 260 Hazardous Waste Management Systems: General

40 CFR 261 Identification and Listing of Hazardous Waste

40 CFR 262 Generators of Hazardous Waste

40 CFR 263 Transporters of Hazardous Waste

40 CFR 264 Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 268 Land Disposal Restrictions

40 CFR 745	Lead; Requirements for Lead-Based Paint Activities
49 CFR 172	Hazardous Materials, Tables, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specifications

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD Guidelines	(1995) Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing
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UNDERWRITERS LABORATORIES INC. (UL)

UL 586	(1996) High-Efficiency, Particulate, Air Filter Units
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1.2 DEFINITIONS

1.2.1 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period in an occupational/industrial environment.

1.2.2 Area Sampling

Sampling of lead concentrations within the lead control area and inside the physical boundaries that is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel.

1.2.3 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead hazards in accordance with current federal, State, and local regulations.

1.2.4 Contaminated Room

Room for removal of contaminated personal protective equipment (PPE).

1.2.5 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.2.6 Eight-Hour Time Weighted Average (TWA)

Airborne concentration of lead to which an employee is exposed, averaged over an 8 hour workday as indicated in 29 CFR 1926.62.

1.2.7 High Efficiency Particulate Air (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated paint dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron or larger size particles.

1.2.8 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps.

1.2.9 Lead-Based Paint (LBP)

Paint or other surface coating that contains lead in excess of 1.0 milligram per centimeter squared or 0.5 percent by weight.

1.2.10 Lead-Based Paint Hazard (LBP Hazard)

Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, and lead-based paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects.

1.2.11 Lead-Containing Paint (LCP)

Lead-based paint or other similar surface coating containing lead or lead compound in excess of 0.06 percent by weight of the total nonvolatile content of the paint.

1.2.12 Lead Control Area

An enclosed area or structure, constructed as a temporary containment equipped with HEPA filtered local exhaust, which prevents the spread of lead dust, paint chips, or debris existing as a condition of lead-based paint removal operations. The lead control area is also isolated by physical boundaries to prevent unauthorized entry of personnel.

1.2.13 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a workday, the PEL shall be determined by the following formula:

$$\text{PEL (micrograms/cubic meter of air)} = 400 \text{ divided by No. Hours worked per day}$$

1.2.14 Personal Sampling

Sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 6 to 9 inches and centered at the nose or mouth of an employee.

1.2.15 Physical Boundary

Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area but inside boundary."

Define OIH – Owners Industrial hygienist retained for this project. This shall be a third party consultant retained by the Owner.

1.3 BASE BID SCOPE OF WORK

1.3.1 Lead-Based Paint/Lead Coated Materials

Based on F&R report 60P-0994 dated October 31, 2013 and revised May 1, 2015, LCP were found on numerous materials located in the DC Moultrie Courthouse. Also since the structure is pre 1978 there is potential for LBP/LCP to be present in the building. The Contractor shall assume that all painted, varnishes and glazed surfaces to be disturbed will contain detectable levels of Lead. All materials to be demolished and removed from the site shall become the property of the contractor. Disclosure requirements for disposal of all materials are the Contractor's responsibility.

The Contractor shall complete all renovation/demolition work in accordance with the requirements found in 29 CFR 1926.62. Submit documentation of compliance with this standard to the Owner prior to start-up of work, training, dust control measures, etc. All compliance sampling and other control measures for potential lead dust shall be addressed within the Lead Hazard Control Plan prepared by the Contractor. Any compliance sampling conducted shall be performed by individuals working under the direction of the Contractor's Competent Person.

1.3.2 Coordination with Other Work

The contractor shall coordinate with work being performed in adjacent areas. Coordination procedures shall be explained in the Plan and shall describe how the Contractor will prevent lead exposure to other contractors and/or Owner's personnel performing work unrelated to lead activities.

1.4 SUBMITTALS

The following submittals shall be provided by the Contractor prior to beginning work:

- Lead Hazard Control Plan;
- Competent Person Qualifications;
- Training Certification of workers and supervisors.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 COMPETENT PERSON (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph entitled "Competent Person (CP) Responsibilities." Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62) which shows ability to assess occupational and environmental exposure to lead, experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Submit proper documentation that the CP is trained and certified in accordance with federal, State and local laws.

1.5.1.2 Training Certification

Submit a certificate for each worker and supervisor, signed and dated by the training provider, stating that the employee has received the required lead training specified in 29 CFR 1926.62(l) and is trained to perform activities which disturb lead-containing paint.

1.5.2 Requirements

1.5.2.1 Competent Person (CP) Responsibilities

- a. Verify training meets all federal, State, and local requirements.
- b. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.
- c. Ensure work is performed in strict accordance with specifications at all times.
- d. Control work to prevent hazardous exposure to human beings and to the environment at all times.
- e. Certify the conditions of the work as called for elsewhere in this specification.

1.5.2.2 Lead Hazard Control Plan

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of lead-containing paint. The plan shall include a sketch showing the location, size, and details of lead control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead related work, collected waste water and dust containing lead and debris, air sampling, respirators, personal protective equipment,

and a detailed description of the method of containment of the operation to ensure that lead is not released outside of the lead control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multi contractor worksites to inform affected employees and to clarify responsibilities to control exposures.

1.5.2.3 Occupational and Environmental Assessment Data Report

If initial monitoring is necessary, submit occupational and environmental sampling results to the Contracting Officer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

In order to reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62 and supporting the Lead Compliance Plan.

- a. The initial monitoring shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.
- b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62 with a complete process description. This includes manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead containing coatings are present.
- c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead compliance plan per 29 CFR 1926.62.

1.5.2.4 Medical Examinations

Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (1 day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

1.5.2.5 Training

Train each employee performing work that disturbs lead, who performs lead-containing paint disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and State (18 VAC 15-30) and local regulations where appropriate.

1.5.2.6 Respiratory Protection Program

- a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62.
- b. Establish and implement a respiratory protection program as required by AIHA Z88.6, 29 CFR 1926.103, 29 CFR 1926.62, and 29 CFR 1926.55.

1.5.2.7 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

1.5.2.8 Lead Waste Management

The Lead Waste Management Plan shall comply with applicable requirements of federal, State, and local hazardous waste regulations. and address:

- a. Identification and classification of wastes associated with the work.
- b. Estimated quantities of wastes to be generated and disposed of.
- c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and operator and a 24-hour point of contact.
- d. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
- e. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
- f. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Wastes shall be cleaned up and containerized daily.
- g. Include any process that may alter or treat waste rendering a hazardous waste non-hazardous.

h. Unit cost for hazardous waste disposal according to this plan.

1.5.2.9 Environmental, Safety and Health Compliance

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead. Comply with the applicable requirements of the current issue of 29 CFR 1926.62. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirement shall apply.

1.5.3 Pre-Construction Conference

Along with the CP, meet with the Contracting Officer to discuss in detail the Lead Waste Management Plan and the Lead Compliance Plan, including procedures and precautions for the work.

1.6 EQUIPMENT

1.6.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead dust, fume and mist. Respirators shall comply with the requirements of 29 CFR 1926.62.

1.6.2 Special Protective Clothing

Furnish personnel who will be exposed to lead-contaminated dust with proper disposable protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the CP.

1.6.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

1.6.4 Vacuum Filters

UL 586 labeled HEPA filters.

1.6.5 Equipment for Personnel

Furnish the Contracting Officer with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the lead removal work within the lead controlled area. Personal protective equipment shall include disposable whole body covering, including appropriate foot, head, eye, and hand protection. PPE shall remain the property of the Contractor.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Protection

3.1.1.1 Notification

- a. Notify the Contracting Officer 20 days prior to the start of any lead work.

3.1.1.2 Lead Control Area

- a. Physical Boundary - Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead will not escape outside of the lead control area.
- b. Warning Signs - Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

3.1.1.3 Decontamination Shower Facility

Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62.

3.1.1.4 Eye Wash Station

Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.

3.1.1.5 Mechanical Ventilation System

- a. To the extent feasible, use local exhaust ventilation or other collection systems, approved by the CP. Local exhaust ventilation systems shall be evaluated and maintained in accordance with 29 CFR 1926.62.
- b. Vent local exhaust outside the building and away from building ventilation intakes or ensure system is connected to HEPA filters.
- c. Use locally exhausted, power actuated tools or manual hand tools.

3.1.1.6 Personnel Protection

Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

3.2 ERECTION

3.2.1 Lead Control Area Requirements

Establish a lead control area by completely establishing barriers and physical boundaries around the area or structure where lead paint disturbance operations will be performed.

3.3 APPLICATION

3.3.1 Lead Work

Perform lead work in accordance with approved Lead Hazard Control Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when the work is performed in accordance with 29 CFR 1926.62, and as specified herein. Dispose of all lead-containing paint and associated waste in compliance with federal, State, and local requirements.

3.3.2 Paint with Lead or Material Containing Lead Removal

Manual or power sanding or grinding of lead surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead is prohibited. Provide methodology for removing lead in the Lead Hazard Control Plan. Select lead removal processes to minimize contamination of work areas outside the control area with lead-contaminated dust or other lead-contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead. Describe this removal process in the Lead Hazard Control Plan.

3.3.2.1 Paint with Lead or Material Containing Lead - Indoor Removal

Perform manual removal in the lead control areas using enclosures, barriers or containments. Collect residue debris for disposal in accordance with federal, State, and local requirements.

3.3.2.2 Paint with Lead or Material Containing Lead - Outdoor Removal

Perform outdoor removal as indicated in federal, State, and local regulations and in the Lead Compliance Plan. The worksite preparation (barriers or containments) shall be job dependent and presented in the Lead Hazard Control Plan.

3.3.3 Personnel Exiting Procedures

Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn in the control area:

- a. Vacuum all clothing before entering the contaminated change room.
- b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
- c. Wash hands and face at the site, don appropriate disposable or uncontaminated reusable clothing, move to an appropriate shower facility, shower.
- d. Change to clean clothes prior to leaving the clean clothes storage area.

3.4 CLEANING AND DISPOSAL

3.4.1 Cleanup

Maintain surfaces of the lead control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area. At the end of each shift and when the lead operation has been completed, clean the controlled area of visible contamination by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the Lead Hazard Control Plan. Reclean areas showing dust or debris. After visible dust and debris is removed, wet wipe and HEPA vacuum all surfaces in the controlled area. If adjacent areas become contaminated at any time during the work, clean, and visually inspect all contaminated areas. The CP shall then certify in writing that the area has been cleaned of lead contamination before clearance testing.

3.4.2 Disposal

- a. All material, whether hazardous or non-hazardous shall be disposed in accordance with all laws and provisions and all federal, State or local regulations. Ensure all waste is properly characterized.

-- End of Section --

SECTION 020840 - REMOVAL OF BUILDING COMPONENTS CONTAINING PCBs AND MERCURY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1000	Air Contaminants
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
49 CFR 172	Hazardous Materials, Table, and Hazardous Materials Communications Regulations
49 CFR 178	Shipping Container Specification

1.2 REQUIREMENTS

1.2.1 Base Bid Scope of Work

As part of the base bid the Contractor will be responsible for having a valid EPA Identification Number issued by the Department of Environmental Quality site specific for this work. The Contractor will be the **GENERATOR** of all hazardous waste generated and be subject to regulations set forth by the Department of Environmental Quality and the United States Environmental Protection Agency. If the generation of hazardous waste is greater than 2,200 lbs in a month, the generator is considered a Large Quantity Generator. A Large Quantity Generator must pay a \$1,000.00 fee to the Department of Environmental Quality. Generation of less than 2,200 lbs in a month is classified as a Small Quantity Generator and is not subject to a fee. The Contractor shall be responsible for determination of classification.

The Contractor will remove and place in disposal or recycle containers all hazardous waste and manage, handle, ship, and dispose of all hazardous waste in accordance with all applicable regulations. Should the material be stored until a disposal container arrives the contractor shall provide a secured place to store the material until disposal.

Copies of all Hazardous Waste Manifests and Certificates of Destruction signed by the final disposal facility will be provided to the Owner within 60 days of shipment.

The Contractor has the responsibility for determining actual quantities of materials to be recycled and reviewing the scope of work. No additional contract price adjustments will be allowed due to variances between actual quantities and the estimated quantities listed herein (unless otherwise specified in this document).

The Contractor shall be responsible for proper removal of the following as part of the base bid:

- A. All Mercury fluorescent light tubes, screw in house hold type mercury containing light bulbs, thermostats, HID lamps, and mercury containing vapor lamps – in the structure and exterior lighting.*
- B. All suspect PCB/suspect PCB containing light ballasts, and mercury switches/thermostats.
- C. All Halogen containing light bulbs.
- D. All emergency/storage batteries including lead acid batteries

* Includes exterior lights and parking lot lights, and any stored lights. Incandescent bulbs may be disposed of as normal construction waste.

** It is anticipated that most of the ballasts will be non-PCB containing labeled ballast. Non-PCB containing ballasts may be disposed of as construction waste. The Contractor will need to remove and inspect all ballast – and segregate Non PCB containing ballasts as part of his scope of work.

1.3 DEFINITIONS

1.3.1 Certified Industrial Hygienist (CIH)

An industrial hygienist who shall be certified by the American Board of Industrial Hygiene.

1.3.2 Leak

Leak or leaking means any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.

1.3.3 Mercury-Containing Lamps

As used in this specification shall mean all fluorescent and high-intensity discharge (HID) lamps scheduled for demolition and/or removal as indicated in the Contract documents that:

- a. Fails the TCLP test for mercury, or
- b. According to the Manufacturer, would fail the TCLP test for mercury
- c. By calculation of equivalent TCLP mercury level from total metal analysis would fail the TCLP test for mercury.

1.3.4 Polychlorinated Biphenyls (PCBs)

PCBs as used in this specification shall mean the same as PCBs, PCB containing lighting ballast, and PCB container, as defined in 40 CFR 761, Section 3, Definitions.

1.3.5 Spill

Spill means both intentional and unintentional spills, leaks, and other uncontrolled discharges when the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases.

1.4 QUALITY ASSURANCE

1.4.1 Regulatory Requirements

Perform PCB related work in accordance with 40 CFR 761, 9 VAC 20-60, and 9 VAC 20-80. Perform mercury-containing lamps storage and transport in accordance with 40 CFR 262, 40 CFR 263, 9 VAC 20-60, and 9 VAC 20-80.

1.4.2 Training

All workers shall have training in accordance with 29 CFR 1910.140 (HAZWOPER) – 24 hr. The instruction shall include: The dangers of PCB and mercury exposure, decontamination, safe work practices, and applicable OSHA and EPA regulations. The Owner or their representative shall review and approve the PCB and Mercury-Containing Lamp Removal Work Plans.

1.4.3 Regulation Documents

Maintain at all times one copy each at the office and one copy each in view at the job site of 29 CFR 1910.1000, 40 CFR 761, 40 CFR 262, 40 CFR 263, 9 VAC 20-60, 9 VAC 20-80 and of the Contractor removal work plan and disposal plan for PCB and for associated mercury-containing lamps.

1.5 SUBMITTALS

Submit two copies of the following documentation:

Certificates

Training Certification

PCB and Mercury-Containing Lamp Removal Work Plan

PCB and Mercury-Containing Lamp Disposal Plan

Closeout Submittals

Transporter certification of notification to EPA of their PCB waste activities and EPA ID numbers

Certification of Decontamination

Certificate of Disposal and/or recycling. Submit to The Owner before application for payment within 30 days of the date that the disposal of the PCB and mercury-containing lamp waste identified on the manifest was completed.

1.6 ENVIRONMENTAL REQUIREMENTS

Use special clothing:

- a. Disposable gloves (polyethylene)
- b. Eye protection
- c. PPE

1.7 SCHEDULING

Notify The Owner 10 days prior to the start of PCB and mercury-containing lamp removal work.

1.8 QUALITY ASSURANCE

1.8.1 PCB and Mercury-Containing Lamp Removal Work Plan

Submit a job-specific plan within 20 calendar days after award of contract of the work procedures to be used in the removal, packaging, and storage of PCB-containing lighting ballasts and associated mercury-containing lamps. Include in the plan: Requirements for U.C. Personal Protective Equipment (PPE), spill cleanup procedures and equipment, eating, smoking and restroom procedures. Obtain approval of the plan by The Owner prior to the start of PCB and/or lamp removal work.

1.8.2 PCB and Mercury-Containing Lamp Disposal Plan

Submit two copies of a PCB and mercury-containing lamp Disposal Plan within 20 calendar days after award of contract. The PCB and Mercury-Containing Lamp Disposal Plan shall comply with applicable requirements of federal, state, and local PCB and RCRA waste regulations and address:

- a. Estimated quantities of wastes to be generated, disposed of, and recycled.
- b. Names and qualifications of each Contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location. Furnish two copies of EPA and state PCB and mercury-containing lamp waste permit applications and EPA identification numbers.
- c. Names and qualifications (experience and training) of personnel who will be working on-site with PCB and mercury-containing lamp wastes.

d. Spill prevention, containment, and cleanup contingency measures to be implemented.

e. Work plan and schedule for PCB and mercury-containing lamp waste removal, containment, storage, transportation, disposal and or recycling. Wastes shall be cleaned up and containerize daily.

PART 2 EXECUTION

2.1 WORK PROCEDURE

Furnish labor, materials, services, and equipment necessary for the removal of PCB containing lighting ballasts, associated mercury-containing fluorescent lamps, and high intensity discharge (HID) lamps in accordance with local, state, or federal regulations. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced. Do not break mercury containing fluorescent lamps or high intensity discharge lamps.

2.1.1 Work Operations

Ensure that work operations or processes involving PCB or PCB-contaminated materials are conducted in accordance with 40 CFR 761, 40 CFR 262 40 CFR 263, and the applicable requirements of this section, including but not limited to:

a. Obtaining suitable PCB and mercury-containing lamp storage sites.

b. Notifying the Owner prior to commencing the operation.

c. Reporting leaks and spills to The Owner.

d. Cleaning up spills.

e. Inspecting PCB and PCB-contaminated items and waste containers for leaks and forwarding two copies of inspection reports to The Owner.

f. Maintaining inspection, inventory and spill records.

2.2 PCB SPILL CLEANUP REQUIREMENTS

2.2.1 PCB Spills

Immediately report to the Contracting Officer any PCB spills.

2.2.2 PCB Spill Control Area

Rope off an area around the edges of a PCB leak or spill and post a "PCB Spill Authorized Personnel Only" caution sign. Immediately transfer leaking items to a drip pan or other container.

2.2.3 PCB Spill Cleanup

40 CFR 761, subpart G. Initiate cleanup of spills as soon as possible, but no later than 24 hours of its discovery. Mop up the liquid with rags or other conventional absorbent. The spent absorbent shall be properly contained and disposed of as solid PCB waste.

2.2.4 Records and Certification

Document the cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup. Provide two copies of test results of cleanup and certification of decontamination.

2.3 REMOVAL

2.3.1 Ballasts

As ballast is removed from the lighting fixture, inspect label on ballast. Ballasts without a "No PCB" label shall be assumed to contain PCBs and containerized and disposed of as required under paragraphs STORAGE FOR DISPOSAL and DISPOSAL. Ballasts with a "No PCB" label may be disposed of as normal construction debris.

2.3.2 Lighting Lamps

Remove all lighting tubes/lamps from the lighting fixture and carefully place (unbroken) into appropriate containers (original transport boxes or equivalent). In the event of a lighting tube/lamp breaking, sweep and place waste in double plastic taped bags and dispose of as hazardous waste as specified herein.

2.4 STORAGE FOR DISPOSAL

2.4.1 Storage Containers for PCBs

49 CFR 178. Store PCB in containers approved by DOT for PCB.

2.4.2 Storage Containers for lamps

Store mercury-containing lamps in appropriate DOT containers. The boxes shall be stored and labeled for transport in accordance with 40 CFR 262, 40 CFR 263, 9 VAC 20-60, and 9 VAC 20- 80.

2.4.3 Labeling of Waste Containers

Label with the following:

- a. Date the item was placed in storage and the name of the cognizant activity/building.
- b. "Caution Contains PCB," conforming to 40 CFR 761, CFR Subpart C. Affix labels to PCB waste containers.

c. Label mercury-containing lamp waste in accordance with 49 CFR 172, 40 CFR 262, and 40 CFR 263. Affix labels to all lighting waste containers.

2.5 DISPOSAL

Intact PCB ballasts and mercury containing lamps will be transported and disposed of by the Contractor. Broken or leaking ballasts/lamps will be treated as hazardous waste and disposed of by the Contractor according to all applicable regulations.

2.5.1 Identification Number

Federal regulations 40 CFR 761 and 40 CFR 263 require that generators, transporters, commercial stores, and disposers of PCB and mercury-containing waste possess U.S. EPA identification numbers. The contractor shall verify that the activity has a U.S. EPA generator identification number for use on the Uniform Hazardous Waste manifest. If not, the contractor shall advise the activity that it must file and obtain an I.D. number with EPA prior to commencement of removal work.

2.5.2 Transporter Certification

Comply with disposal and transportation requirements outlined in 40 CFR 761 and 40 CFR 263. Before transporting the PCB and lamp waste, sign and date the manifest-acknowledging acceptance of the PCB and mercury-containing waste from The Owner. Return two signed copies to The Owner before leaving the job site. Ensure that the manifest accompanies the PCB and lamp waste at all times. Submit transporter certification of notification to EPA of their PCB and lamp waste activities (EPA Form 7710-53).

2.5.2.1 Certificate of Disposal and/or Recycling

40 CFR 761. Certificate for the PCBs and PCB items, and lamps disposed shall include:

- a. The identity of the disposal and or recycling facility, by name, address, and EPA identification number.
- b. The identity of the PCB and lamp waste affected by the Certificate of Disposal including reference to the manifest number for the shipment.
- c. A statement certifying the fact of disposal and or recycling of the identified PCB and/or lamp waste, including the date(s) of disposal, and identifying the disposal process used.
- d. A certification as defined in 40 CFR 761.

-- End of Section --

