

**SPECIFICATIONS & DRAWINGS FOR  
ASBESTOS ABATEMENT PROJECT**

*for*

**FORMER HOSPITAL COMPLEX  
BUILDING 3602  
Fort Chaffee, Arkansas**

**EEG PROJECT #06-0111-004**

*Prepared for:*

Mr. John Kominsky  
Environmental Quality Management, Inc.  
1800 Carillon Boulevard  
Cincinnati, Ohio 45240

*February 2006*

**CONTRACT SPECIFICATIONS**  
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## I. GENERAL INFORMATION

### Requirements

#### Site Investigation

In accordance with an agreement between Environmental Quality Management, Inc., and **ENVIRONMENTAL ENTERPRISE GROUP, INC. (EEG)**, EEG has produced this design document and will act as Project Manager to oversee the asbestos abatement project. The Contractor acknowledges that he has investigated and satisfied himself as to:

- a. The conditions affecting the work, including but not limited to physical conditions of the site which may bear upon site access, handling and storage of tools and materials, access to water, electric or other utilities or otherwise affect performance of required activities.
- b. The character and quantity of all surface and subsurface materials or obstacles to be encountered in so far as this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Building Owner or a designated consultant, as well as information presented in drawings and specifications included with this contract.
- c. This abatement project is part of a research endeavor funded by the United States Environmental Protection Agency (USEPA). Details concerning the “Alternative Asbestos Control Method” research project can be viewed at <http://epa/region6/6xa/asbestos.htm>. The level of industrial hygiene that will be undertaken during this work will be far in excess of what is ordinarily performed. The exterior grounds surrounding building 3602 will be encumbered by multiple sampling points. The contractor should take this into consideration and make necessary arrangements for limited access to the exterior of the building.

Any failure by the Contractor to acquaint himself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Facility Owner is not responsible for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Building Owner or by on site conditions.

## 1.0 Summary of Work

- 1.1 The scope of work for this project involves the removal and disposal of asbestos-containing materials as noted in contract specifications and project drawing(s) (See *Appendix E*). This contract shall be considered fully complete upon successful air clearance sampling of the work area(s) and Owner's acceptance of closeout documents. The contract specifications and project drawings are designed to locate areas of work and identify work procedures. Discrepancies in the bid documents shall be resolved by EEG, Inc. after receiving a written request for clarification from the Contractor. All given quantities are estimated and the Contractor shall be responsible for verifying estimates.

**Address all correspondence to:**

**Mr. Bob Ed Smith**  
**Environmental Enterprise Group, Inc. (EEG)**  
**220 North Knoxville, Suite 200**  
**Russellville, Arkansas 72801**

### 1.2 Scope of Work

Contractor shall perform the following abatement services and disposal:

Approximately 814 linear feet of window glazing (all windows)

Approximately 20,700 square feet of drywall joint compound throughout (all drywall)

The contractor is responsible for the removal and disposal of associated non-acm wall and attic insulation resulting from the abatement work. This waste is also to be disposed of as ACM.

The contractor is responsible for quantification of all target materials. The quantities above are estimates based on the asbestos survey. The contractor is responsible for the removal of all asbestos-containing materials identified in EEG's survey document relating to ACM with the exception of the floor tile, mastic and resilient floor covering.

The Contractor will install engineering controls to isolate all work areas. Installation of negative air machines shall be accomplished immediately after arrival on site. After having accomplished this, the Contractor will further isolate the intended work area. The contractor will install 2 layers of clear six mil polyethylene sheet over the exterior of the windows. The plastic will be secured in place with wooded batten strips. The contractor is to establish a 3-chambered full decontamination system complete with hot and cold running water and shower water filtration equipment. All wastewater generated at the site is to be filtered to 5 microns before being discharge into a sanitary sewer system. The contractor shall then pre-clean the affected area. After containment barriers are in place, the Contractor shall remove the targeted materials and dispose of as asbestos containing material. The windows containing the asbestos containing window glazing are to be removed from the inside of the building. The windows are to be wrapped with 2 layers of 6-mil plastic and tagged according to applicable regulations. All waste is to be properly containerized and left inside the containment area. Upon a successful visual inspection, the areas will undergo PCM clearances. A waste load out of the generated asbestos containing waste will be performed at or near the end of the project. This load out may or may not occur concurrent with the project. All waste to be disposed of as ACM.

A mandatory pre-bid was previously held at the site. If the contractor wishes to view the site again

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prior to the bid, please contact EEG.

Sealed bids will be received by the **General Contractor** (to be determined) until 3:00 p.m. March 15, 2006. The owner reserves the right to reject any or all bids. Bid packages will be reviewed for completeness and proper submittals. Award of the project will be granted to the firm that exhibits the most responsive bid and reasonable costs.

**1.3 Special Project Consideration**

The Contractor awarded this project agrees to allow any federal or state inspector, acting in their official capacity, to have access to the job-site. This is a research project funded by USEPA. It is anticipated that several people will be on site acting in an official capacity for USEPA and ADEQ.

## 2.0 Project Timeframe

2.1 Work shall start on the start dates given in the following timeframe.

2.2	<u>Start Date</u>	<u>Completion Date</u>
	March 15, 2006	March 23, 2006

Contractor may perform the work between the hours of day light to dark., Monday through Sunday. The Owner's Representative shall perform all final visual inspections. After successful completion of each final visual inspection, final air clearance monitoring shall be performed by the Owner's Representative using aggressive sampling methods. PCM clearance levels of <. 01 f/cc in the work areas and a positive result of visual inspections shall be considered a clean area. All critical barriers and running negative air machines are to remain in place until analytical evidence allows their removal. Any deviation from this schedule must be approved by the Owner's Representative.

### 3.0 Liquidated Damages

- 3.1 Contractor must agree to commence work on the date specified in Section 2.2 and to fully complete the project within the calendar days indicated on the Agreement between Owner and Contractor.
- 3.2 Failure to complete as per contract by the agreed upon dates will force the Contractor to suffer liquidated damages of **\$1,500 per day**.
- 3.3 Liquidated damages will be subtracted from the contract sum for each work shift or part thereof during which the project remains incomplete. Liquidated damages will be assessed for every day the Contractor goes beyond the scheduled completion date as indicated in Section 2.2. Liquidated damages are not intended to penalize the Contractor, but rather are intended to compensate the Owner for damage which will occur in regard to disrupted work schedules and additional operating expenses, should the Contractor fail to complete the work on time. In addition, Contractor shall bear the cost for any additional air monitoring or project management costs incurred due to failure to meet scheduled start or completion dates as indicated in Section 2.2. Such fees will be **\$1,500 per shift**.



## 4.0 Meetings

### 4.1 Pre-Construction Meeting

The Owner's Representative and Contractor's Representative shall meet at a designated time and place prior to the commencement of abatement project activities. The purpose of the meeting is to review all pre-work submittals, conduct a pre-existing damage inspection and reconfirm the responsibilities of all parties. This meeting will occur at *To Be Determined*.

#### Payment Terms

Contractor is to submit invoices to EEG utilizing AIA document G-702 and G-703. Periodic payments to the contractor are subject to EEG's approval. The contractor is to supply Lien Waivers from all subcontractors for each pay request. Contractor is to submit Project Closeout documents and final lien waivers to EEG, Inc., for review. Upon owner's acceptance of the project and receipt of the afore-mentioned documents, payment will be made within 30 days of the owner's receipt of the invoice less the retainage amount.

#### Retainage

Each invoice submitted by the Contractor shall be based upon the value of work actually completed as of the date of the Invoice less retainage of Ten Percent (10%). Final payment to the contractor, including retainage, shall be made by the Owner when the contractor has fully completed its scope of work as set forth in the contract and when EEG has received and approved all project closeout documentation required from the contractor.

## 5.0 Insurance Requirements

### 5.1 Certificates of Coverage

5.1.1 Contractor shall have certificates of coverage.

5.1.1.1 The Contractor shall purchase and maintain insurance that will protect him from claims that may arise out of or result from his activities under this Contract, whether those activities are performed by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable. Where applicable, all insurance carriers used must be a licensed or admitted carrier for the state in which the Contractor is domiciled. For the General Liability (GL) insurance policy, the insurance agent must be an appointed agent by the carrier and be registered as such with the Arkansas Insurance Commission. All policies must be in force and valid for the duration of the contract.

5.1.1.1.1 Contractor shall have proof of coverage under the Workman's Compensation insurance system of the State of Arkansas.

5.1.1.1.2 Contractor shall have a certificate of general liability insurance for personal injury, occupational disease and sickness and death and property damage, which specifically states providing coverage for asbestos abatement work.

### 5.2 Policy Limits

1. A. Worker's Compensation:

Bodily Injury by Accident	- \$500,000 each accident
Bodily Injury by Disease	- \$100,000 each accident
Bodily Injury by Disease	- \$500,000 policy limit

B. Employer's Liability - \$500,000

2. Comprehensive General Liability

A. Bodily and Personal Injury - \$1,000,000 each person  
\$1,000,000 each occurrence

B. Property Damage - \$1,000,000 each occurrence  
\$1,000,000 aggregate

- 3. Automobile Liability
  - A. Bodily Injury - \$500,000 each person  
\$500,000 each occurrence OR  
\$500,000 combined single limit
  - B. Property Damage - \$500,000 each occurrence
  
- 4. Independent Contractors
  - A. Bodily and Personal Injury - \$1,000,000 each person  
\$1,000,000 each occurrence
  - B. Property Damage - \$1,000,000 each occurrence  
\$1,000,000 aggregate
  
- 5. Contractual Liability
  - A. Bodily and Personal Injury - \$1,000,000 each person  
\$1,000,000 each occurrence
  - B. Property Damage - \$1,000,000 each occurrence  
\$1,000,000 aggregate

Furnish one copy of certificates herein required for each copy of the agreement; specifically set forth evidence of all coverage required. The form of the certificate will be AIA Document G705 or a similar company form. Furnish to the Owner copies of any endorsements that are subsequently issued amending coverage, including policy renewals.

**5.3 Prevailing Wage**

The Arkansas Department of Labor prevailing wage rate shall not apply to this project.

5.4 Contractor shall submit copies of insurance coverage as described in Section 5.0.

**5.5 Bid Guarantee and Bonds**

No bid bonds are required.

**PERFORMANCE AND PAYMENT BOND**

No performance or payment bonds are required.

## 6.0 Owner Responsibilities

- 6.1 The Owner will provide a source of electricity and water. The Contractor shall be responsible for labor, materials, equipment and other items necessary to provide use and bear all associated costs.

Reference Section 15.0, Worker Protection and Section 17.0, Execution of Abatement Work for additional information.

- 6.2 If the Owner permits the Contractor to use any of the Owner's equipment, tools, or facilities, such use will be gratuitous and the Contractor shall release the Owner from any responsibility arising from claims for personal injuries including death, arising out of the use of such equipment, tools, or facilities irrespective of the condition there of or any negligence on the part of the Owner in permitting their use.

- 6.3 **Not Used**

- 6.4 Disposal of ACM shall be performed in accordance with State of Arkansas waste disposal laws and with all federal and local regulations.

- 6.5 After removal of ACM, the remaining surfaces will be sealed with an encapsulant after successfully passing the final visual inspection in accordance with Arkansas regulations.

### 6.5.1 Bid Submittals

- 6.5.1.1 Contractor must be a licensed General Contractor for the State of Arkansas and provide evidence of such current licensure.
- 6.5.1.2 Contractor must be a licensed Asbestos Abatement Contractor for the State of Arkansas and provide evidence of such current licensure.
- 6.5.1.3 Contractor shall provide a copy of current insurance coverage as described in section 5.0 of the specifications.

### Pre-Qualification Submittals

The contractor is required to provide the following pre-qualifying information with their bid. See 6.5.1.1 through 6.5.1.3

- 6.5.1.4 **In the event the Owner chooses, the contractor may be required to provide the following additional pre-qualifying submittals**
- 6.5.1.5 Contractor shall provide a resume of the firm including:
- A. The number of years engaged in asbestos removal.
  - B. List of full-time supervisory personnel employed by the company including their training and job experience. Provide evidence of their successful completion of an EPA-approved "Asbestos Contractor/Supervisor" course.

- C. List of current asbestos removal workers employed by the company and evidence of their licensure in the State of Arkansas.
- D. List of equipment, type(s) and quantities, such as negative air units, decontamination facilities and HEPA vacuums.

**6.5.1.5** Contractor shall submit a notarized statement, signed by an officer of the company, describing any citations and/or violations by any regulatory agency or consultant concerning performance on previous abatement projects. Failure to disclose the information requested will result in the disqualification of the bidder. The statement shall contain the following information:

- 6.5.1.5.1 A record of any citations issued by Federal, State or Local regulatory agencies relating to asbestos abatement activity. Include projects, dates, and resolutions.
- 6.5.1.5.2 A list of penalties incurred through non-compliance with asbestos abatement project specifications including liquidated damages, overruns in scheduled time limitations and resolutions.
- 6.5.1.5.3 Situations in which an asbestos-related contract has been terminated, including projects, dates and reasons for terminations.
- 6.5.1.5.4 A listing of any asbestos-related legal proceedings/claims in which the Contractor (or employees scheduled to participate in this project) has participated or is currently involved. Include descriptions of role, issue and resolution to date.
- 6.5.1.5.5 The Contractor shall provide a notarized statement that the company or any of his subcontractors has not been suspended, debarred, or voluntarily excluded from performing EPA-funded projects under 40 CFR Part 32.
- 6.5.1.5.6 The contractor is to submit information regarding their technical approach to the project. This should include the number of personnel dedicated to the project. The plan must also include the overall, expected work procedures to be employed to accomplish this project.

## 7.0 Notification

- 7.1 Written notification to the Arkansas Department of Environmental Quality (ADEQ) is required for this project. The Contractor shall follow all current NESHAP requirements and provide the Consultant with a copy of the notice (see *Appendix A*).
- 7.2 Notification of asbestos abatement project to local fire departments, police and emergency medical personnel.

## **8.0 Work Submittals**

The Contractor will provide two (2) copies of the following information to the Owner's Representative at the address given on the cover of this document before the project may begin. Failure to provide these documents prior to the project start date will be considered a breach of the contract and the contractor will be assessed liquidated damages of \$1,500 per day until the required documents are submitted.

### **8.1 Employee Information**

**8.1.1** Submit documentation from a physician that all employees or agents have received medical monitoring as required in 29 CFR 1926.1101 and 29 CFR 1910.134.

**8.1.2** Submit evidence that all abatement employees have been fit-tested for their assigned respiratory protection equipment.

**8.1.3** Licensed Employees

Contractor shall post a list of on-site employees, both supervisory and workers with evidence of current license with the State of Arkansas Department of Environmental Quality (ADEQ), as well as copies of certificates of completion of EPA accredited training course and their social security numbers.

Submit resume or qualifications for the company / entity conducting personal air monitoring.

Submit proof of AIHA Accreditation for Laboratory Performing Analysis of Personal Air Samples.

### **8.2 Site Requirements**

**8.2.1** Examples of warning signs.

**8.2.2** **Not Used**

**8.2.3** Layout of all decontamination enclosure systems and barriers.

**8.2.4** Placement of negative air equipment.

**8.2.5** Specimen copies of daily progress reports and visitor's logs, pump calibration log, field sample sheets and record of disciplinary action for safety violations.

### **8.3 Equipment**

**8.3.1** Manufacturer's certification that all equipment meets EPA and OSHA requirements.

**8.3.2** Description of any special equipment.

**8.3.3 Rental Equipment**

Provide copies of written notification to the rental agency of the rental equipment's intended use.

**8.3.4 Respiratory/Personal Protective Equipment**

- A.** Provide list of all respiratory protection equipment, including cartridges, face pieces, sources of compressed air.
- B.** Provide copy of NIOSH/MSHA approval for respirators and cartridges.
- C.** Provide intended use of cartridges (e.g. organic vapor for adhesive removal).
- D.** Document brand and model of full body covering and any other personal protective equipment to be used.

**8.4** Submit proof that required site location and arrangements for transport and disposal of asbestos-containing waste materials have been made. Submit a copy of handling procedures and list of protective equipment utilized for asbestos disposal at the landfill, signed by landfill owner.

**8.5 Health and Safety Program**

Submit copies of the following programs, policies and procedures:

**8.5.1** Respiratory Protection Program

**8.5.2** Hazard Communication Program (include copies of MSDS information for all chemicals to be brought on-site)

**8.5.3** Electrical Safety Program (include site specific SOP) to be used for electrical isolation including work in and near the electrical room)

**8.5.4** Fire Protection Program

**8.5.5** Emergency Response Plan

**8.5.6** Heat Stress Program

**8.5.7** Training Program (include topics to be covered prior to commencement of work and topics to be covered during weekly meetings)

**8.6** Listing of all major subcontractors and suppliers complete with name, address, phone numbers and appropriate submittals for the material, equipment or work to be performed.



## 9.0 Submittals During Abatement Activities

- 9.1 Submit weekly progress reports and updates to the Project Schedule.

Include review of progress with respect to the established milestones, major problems and actions taken, injury reports, equipment breakdown and updates to the Project Schedule.

- 9.2 Maintain daily information on worker and visitor access to the work area in a Visitor Log.

### 9.3 Emergency Planning and Safety Meeting:

The Contractor shall hold weekly safety meetings with all personnel to be employed on the site of this project. Written minutes, the signatures of those in attendance and the topics covered shall be submitted to the Owner's Representative. The following topics shall be discussed prior to commencement of work and periodically thereafter:

- 9.3.1 Emergency planning shall be developed prior to abatement initiation and agreed to by Contractor and Owner's Representative.

- 9.3.2 Emergency procedures shall be in written form and prominently posted in the clean change area and equipment room of the worker decontamination area. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

- 9.3.3 Emergency planning shall include the written notification of police, fire and emergency medical personnel of planned abatement activities.

- 9.3.4 Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided. Documentation of safety meetings shall be provided in the form of written minutes to the Owner's Representative, including signature of employees in attendance, name of instructor, topics covered and date of meeting.

- 9.3.5 Employees shall be trained in evacuation procedures in the event of workplace emergencies.

- 9.3.6 Telephone numbers of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone and directions to the nearest hospital.

- 9.3.7 The "Contractor's Guidelines" prepared by EEG, Inc. shall be covered with all employees prior to working on the project.

- 9.3.8 Health and safety programs, plans and procedures will be reviewed during weekly safety meetings.

- 9.4 All submittals will be clearly presented and in a form which may be easily included in the Project Manual.

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- 9.5 The Contractor must have available for viewing at the job site, a copy of and comply with 29 CFR 1910.1001, 29 CFR 1910.1200, 29 CFR 1910.20, 29 CFR 1926.1101 and 29 CFR 1926 Part III Amendment of 14 September 1988; 40 CFR Part 763 Subpart E Part II and III, 40 CFR Part 61 Subpart M the National Emission Standard for Hazardous Air Pollutants and the State of Arkansas Asbestos Abatement Regulations. (Cards must be on-site also)
  
- 9.6 Air monitoring data per specifications must be on site as soon as it is available. A copy of the previous day's air monitoring results will be posted in or near the clean room.
  
- 9.7 Bulk sample analysis.
  
- 9.8 Sign in/sign out sheet.
  
- 9.9 Written notification to the Arkansas Department of Environmental Quality (ADEQ) is required for this project. The Contractor shall follow all current NESHAP requirements and provide the Consultant with a copy of the notice. (See *Appendix A*)
  
- 9.10 Waste transportation and disposal records (these items must also be included in close-out documents).

## 10.0 Project Coordination

The Contractor shall designate one individual as Project Superintendent or Coordinator (P.C.). The Project Coordinator must have a minimum of two (2) years of on the job experience in the practice of asbestos abatement. In addition, the P.C. must have completed a training and certification course for "Supervision of Asbestos Abatement Contracts" which is an EPA-accredited course equivalent. Prior to commencing work, the Contractor shall submit the name of the Project Coordinator to the Owner's Representative in the pre-work submittals. The Project Coordinator shall remain until the project is complete and cannot be removed without the written consent of the Owner's Representative. The Project Coordinator shall be required to supervise the work activities at all times and shall stop work not in accordance with the requirements of the contract documents. He shall be knowledgeable in and responsible for the duties of the Contractor as set forth in the contract specifications and regulatory requirements.

## **11.0 Contractor Duties**

- 11.1** Pay all sales, consumer, payroll, use and other taxes as required by law.
- 11.2** Comply with all codes, ordinances, regulations and standards of the industry. If a conflict between the contract specifications and above-mentioned legal requirements; then the more stringent shall govern or apply.
- 11.3** Ensure that all employees of the Contractor are fit to perform their assigned tasks. Contractor shall be held accountable for the behavior and actions of the Contractor's employees.
- 11.4** The use of the best available technology and stringent standards for all abatement work activities including safety of the workplace is the sole responsibility of the Contractor.
- 11.5** Contractor shall be responsible for the protection of existing property during the abatement project. Contractor shall repair damage to property or equipment caused by their abatement activities. All damages caused by the Contractor to be repaired or replaced with materials approved by the Consultant and work, thereof.

## 12.0 Sign Requirements

- 12.1 No company or project identification signs will be allowed to be erected at the project site.
- 12.2 Warning signs as required by 29 CFR 1926.1101 (OSHA) shall be posted at all entries and exits to the work area and shall read:

**DANGER  
ASBESTOS  
CANCER AND LUNG DISEASE HAZARD  
AUTHORIZED PERSONNEL ONLY  
RESPIRATORS AND PROTECTIVE  
CLOTHING ARE REQUIRED IN THIS AREA**

- 12.3 Warning labels for all asbestos disposal bags, barrels, or containers as required by the U.S. Department of Transportation shall read:

**RQ HAZARDOUS SUBSTANCE  
SOLID, N.O.S., ORM-E, NA 9188  
(ASBESTOS)  
HAZARDOUS WASTE  
DANGER  
CONTAINS ASBESTOS FIBERS  
AVOID  
BREATHING DUST  
CANCER & LUNG DISEASE HAZARD  
HANDLE WITH CARE!**

- 12.4 Contractor is responsible for removing all signs after a work area is complete.

## 13.0 Project Close-out

- 13.1 The work required under this section consists of the final inspections, submitting of all closeout documents and related items to complete the work indicated in the contract and described in the project specifications.
- 13.1.1 The Contractor shall make a request for a final inspection by the Owner's Representative as soon as possible prior to inspection for each work area. A list of any deficiencies, compiled by the Owner's Representative, will be corrected by the Contractor. If in his judgment the project is not ready for a final inspection, the Owner's Representative may schedule another inspection.
- 13.1.2 The Contractor shall promptly remedy all defects as reported by the Owner's Representative as per specifications.
- 13.1.3 The Contractor shall submit final request for payment to the Owner along with the following items after receiving a written clearance of the project from the Consultant.

### 13.2 Close-Out Documents

Contractor shall submit two (2) copies of their Project Manual containing the following information including all AHERA record keeping requirements response actions (40 CFR Part 763.94) to the Russellville Office of EEG, Inc. within 14 days after receipt of "Owner's Release".

- 13.2.1 Current insurance certificates.
- 13.2.2 Abatement contract with any change orders that may apply.
- 13.2.3 Current Asbestos Abatement License.
- 13.2.4 Written notification to the Arkansas Department of Environmental Quality (ADEQ) is required for this project. The Contractor shall follow all current NESHAP requirements and provide the Consultant with a copy of the notice (see *Appendix A*).
- 13.2.5 Guarantee of Work which shall read "We hereby guarantee all work performed by us on the (Name of Contract) project to be free from defective materials and workmanship for a period of one (1) year or such longer period of time as may be called for in the contract documents for such portions of the work.
- 13.2.6 Copies of any correspondence with authorities and permits.
- 13.2.7 Statement, which is signed by the Owner, that the project has received final acceptance from the Owner.
- 13.2.8 Certify that all rental vehicles and equipment, if any, have been visually inspected and cleared by the Project Supervisor.

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- 13.2.9 Copies of all air monitoring data including area, personal and manometer charts.
- 13.2.10 Employee information, certificates, physicals and respirator fit tests.
- 13.2.11 Daily employee logs and supervisor reports with project schedule as accomplished.
- 13.2.12 Lien Waivers--the following unmodified document must be submitted, signed and notarized by all parties involved, prior to payment--Contractor's Affidavit of Release of Liens (AIA documents G706 and G706A) and Consent of Surety (AIA Document G707 or G707A).
- 13.2.13 Identification of any continuing Owner responsibilities required by applicable regulations.
- 13.2.14 Any warranties for replacement materials.
- 13.2.15 Waste Disposal Manifest

## 14.0 Temporary Facilities and Equipment

14.1 All materials and equipment must comply with applicable standards and be maintained in serviceable condition.

### 14.1.1 Scaffolding

14.1.1.1 All scaffolding, ladders and/or staging shall be provided as necessary to perform the work of this contract. Scaffolding may be of suspension or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with applicable OSHA regulations. An OSHA Scaffolding Competent person shall certify in writing that the scaffolding meets all OSHA requirements. The certification shall be affixed to the scaffolding to be used.

14.1.1.2 All metal ladders, etc, shall be equipped with an abrasive non-slip surface.

14.1.1.3 Provide a non-skid surface on all scaffold surfaces subject to foot traffic.

### 14.1.2 Barricades, Coverings and Guardrails

14.1.2.1 Provide handrails, guardrails and covers for floor, roof and wall openings and stairways.

14.1.2.2 Provide suitable temporary watertight coverings over openings as required to protect interior work from inclement weather.

14.1.2.3 Meet requirements of federal, state and local authorities having jurisdiction for the protection of persons and property.

### 14.1.3 Temporary Water Service

14.1.3.1 If available, use of existing domestic water service to the facility is permissible for temporary water supply during construction. The tie-into location to the existing system shall be coordinated with and acceptable with the Owner.

14.1.3.2 Service costs for water used from existing facilities shall be paid by the owner.

14.1.3.3 Back-flow protection shall be included at all connections to the Owner's water system. All valves are to be temperature and pressure rated for operation of the temperatures and pressures encountered. Connections and fittings shall be removed without damage or alteration to existing water piping and equipment, after completion of use. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.



- 14.1.3.4 Heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system will be employed to provide water into each Decontamination Unit and work area. Provide temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment and fittings as required to allow for connection to existing wall hydrants or spouts.
  - 14.1.3.5 If available, use of hot water from the building hot water system may be secured provided back-flow protection is installed at the point of connection and if written authorization is provided by the Owner's Representative. If not available, the contractor is to supply hot water to the decontamination units.
  - 14.1.3.6 Damage to the existing water service or system due to abatement project activities or by the Contractor's employees or subcontractors is the sole responsibility of the Contractor.
- 14.1.4 Temporary Electricity and Lighting**
- 14.1.4.1 The owner will provide a source of electricity for the project. The contractor is responsible for the tie-in to the existing service for the contractor's electrical panels.
  - 14.1.4.2 The owner shall pay for the service cost of electrical power used from all facilities. Contractor shall bear all costs and responsibilities for labor, materials and other items necessary to provide use.
  - 14.1.4.3 Provide branch and circuit wiring, with area distribution boxes located so that lighting and power is available throughout the project by the use of construction type power cords. All lighting must be grounded and equipped with a ground fault interrupter.
  - 14.1.4.4 Artificial lighting must be provided by the contractor for all areas of work when natural light is not adequate for work.
  - 14.1.4.5 Provide service to Decontamination Unit sub panel and disconnect shall be equipped and sized to accommodate all electrical equipment required for work completion.
  - 14.1.4.6 Power outlets other than 110-120 volt power must have identification warning signs. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide dry type transformers where required to provide voltages necessary for work operations.
  - 14.1.4.7 Provide receptacle outlets equipped with reset button, pilot light and ground-fault circuit interrupters, for plug-in connection of power tools and equipment.

14.1.4.8 Use only grounded extension cords. Use single lengths or use waterproof connectors to connect separate lengths of electric cords when single lengths will not reach areas of work. Use "hard-service" cords where exposed to abrasion and traffic.

14.1.4.9 Damage to the existing electrical system due to abatement project activities or by the Contractor's employees or subcontractors is the sole responsibility of the Contractor.

**14.1.5 Temporary Telephone Service**

14.1.5.1 No facility phone service exists at the site. The contractor may use cell phones for business purposes.

14.1.5.2 Calls of a personal nature are not allowed.

14.1.5.3 Damage to the existing telephone service or system due to abatement project activities or by the Contractor's employees or subcontractors is the sole responsibility of the Contractor.

**14.1.6 Temporary Sanitary Facilities**

14.1.6.1 Contractor's personnel may not use existing toilet facilities in the work area during performance of the work.

14.1.6.2 Contractor shall provide and maintain portable toilet facilities for the duration of the project.

**14.1.7 Temporary Fire Protection**

14.1.7.1 Provide and maintain temporary fire protection in accordance with requirements of the local protection code during performance of the work.

14.1.7.2 Provide Type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. Provide type "ABC" dry chemical extinguisher, or a combination of several extinguisher of NFPA recommended types for the exposures in each case.

**14.1.8 Temporary Project Superintendent's Field Office**

14.1.8.1 If temporary offices are provided by Contractor, coordinate location of placement with the Owner's Representative.

14.1.8.2 Temporary offices shall be in a weather and watertight building or trailer and maintained in a neat and orderly appearance.

14.1.8.3 Arrangements are to be made with utility companies by Contractor to provide water and electricity for office. Contractor pays all costs for meters, installation, maintenance, removal and service charges for utilities to office.

**14.1.9 Temporary Storage**

14.1.9.1 The contractor is responsible for providing any storage if needed on site.

**14.2 Execution**

**14.2.1 General**

14.2.1.1 Maintain and operate systems to assure continuous service.

14.2.1.2 Modify and extend systems as work progresses.

**14.2.2 Scaffolding**

14.2.2.1 Exercise care during erection and/or moving of scaffolding so that the polyethylene floor covering is not damaged.

14.2.2.2 Non-slip surfaces should be cleaned as necessary.

14.2.2.3 Clean all construction aids within the work area, wrap in one layer of 6 mil polyethylene sheet and seal before removal from work area at the completion of abatement work if not cleaned of all visible residue.

**14.2.3 Installation**

For temporary services and facilities installation use qualified tradesmen. Temporary services and facilities should be located where they will serve entire project adequately with minimum interference with performance of the work.

**14.2.4 Water Service**

14.2.4.1 When available, water connections to the Owner's existing potable water system is limited to one 3/4" pipe size connection, and a maximum flow of 10 gpm each to hot and cold water supply.

14.2.4.2 Maintain hose connections and outlet valves in leak proof condition. Provide a drip pan of suitable size to minimize the possibility of water damage where finish work below an outlet might be damaged by spillage or leakage. As water accumulates drain it promptly.

**14.2.5 Electrical Service**

**14.2.5.1** The owner will provide a source of electricity for the project. The contractor is responsible for the tie-in to the existing service for the contractor's electrical panels.

**14.2.6 Removal**

**14.2.6.1** When use of temporary material and equipment is not required, remove promptly.

**14.2.6.2** Damage caused by temporary installations or facilities is to be repaired and cleaned.

**14.2.6.3** Existing facilities used for temporary services are to be restored to specified or original condition.

## **15.0 Worker Protection**

- 15.1** Prior to commencement of work, the workers shall be instructed, and shall be knowledgeable, in the areas described under submittals and notices.
- 15.2** Respiratory Protection
- 15.2.1** Provide workers with personally issued and marked respiratory equipment approved by NIOSH and OSHA Standard 29 CFR 1926.1101.
- 15.2.2** Respiratory protection used shall at all times be in compliance or in excess of OSHA requirements. The following is a schedule of minimum respiratory protective equipment to be used during this operation. Contractor is responsible for enforcing requirements.
- 15.2.2.1** Pre-cleaning of Work Area: Half Face air purifying respirators equipped with HEPA cartridges specified for Asbestos Dust and MSHA/NIOSH approved.
- 15.2.2.2** Plastic Installation: Half Face air purifying respirators equipped with HEPA cartridge specified for Asbestos Dust and MSHA/NIOSH approved.
- 15.2.2.3** Gross Asbestos Removal and Gross Clean-up: Powered Air Purifying Respirators. This is a minimum requirement for OSHA Class I work. Contractor shall perform work in Class I removal areas in full face piece supplied air respirators in the pressure demand mode equipped with egress bottle, or provide a negative exposure assessment.
- 15.2.2.4** Final cleaning operations and plastic removal: Half Face air purifying respirators equipped with HEPA cartridge specified for Asbestos Dust and MSHA/NIOSH approved.
- 15.2.2.5** Loading Bags on Truck (outside work area): Half Face air purifying respirators equipped with HEPA cartridge specified for Asbestos Dust and MSHA/NIOSH approved.
- 15.2.2.6** Unloading Bags at Landfill: Half Face air purifying respirators equipped with HEPA cartridge specified for Asbestos Dust and MSHA/NIOSH approved.
- 15.2.2.7** Flooring removal with chemical solvent: Respirators shall meet requirements for gross removal of asbestos (Section 15.2.2.3). Respirators shall also be equipped with a second stage filter for protection from organic vapors from solvent.
- 15.2.2.8** Flex Connector Removal and Glovebag Operations: Powered air purifying respirators or full-face air purifying respirators.

**15.2.2.9** The above schedule is based upon minimal acceptable protection. If at any time during the abatement project, the exposure level exceeds .01 f/cc after applying the protection factor of the respirators in use to the fiber levels, then the respiratory protection equipment should be substituted for that with protection factors to reduce exposure below .01 f/cc. Personal air monitoring results shall be posted in the clean room of the decontamination unit or other clearly visible area within 24 hours of sampling completion.

### **15.3 Protective Clothing**

- 15.3.1** Workers shall wear full body protective suits when working in containment areas. Provide workers with sufficient sets of protective full body clothing. Such clothing shall consist of full body coveralls and headgear or equivalent sets. Provide eye protection, hard hats and footwear as required by applicable safety regulations. Non-disposable clothing and footwear shall be left in the contaminated equipment room until the end of the asbestos abatement work, at which time such items shall be disposed of as asbestos waste or placed in disposal containers properly marked with warning labels and left unopened until inside the next contained work area. The Contractor will provide at least four (4) sets of full body clothing per day per inside worker and at least three (3) sets for each outside worker, air monitor and supervisor. If the Contractor does not use disposable suits equipped with attached foot covering, elastic wrist and elastic hoods attached, these pieces must be provided and secured to each other with "duct" tape or equivalent. Wrists and neck openings must be taped.
- 15.3.2** Provide authorized visitors with a set of suitable protective clothing, headgear, eye protection and footwear, as described above, whenever they are required to enter the work area.
- 15.3.3** Provide and post, in the equipment room and the clean room, the decontamination and work procedures to be followed by workers.

## 16.0 Removal Materials, Tools and Equipment

- 16.1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.
- 16.2 Store all material subject to damage off the ground, away from wet or damp surfaces, under cover sufficient to prevent damage or contamination.
- 16.3 Damaged or deteriorating materials shall not be used and shall be removed from the premises. Materials that become contaminated with asbestos shall be disposed of in accordance with applicable regulations.
- 16.4 Plastic sheeting of 4 mil (0.1 mm) for wall application and 6 mil <0.15 mm> for floors. Surfaces should be layered to assure protection of electrical equipment, floor and wall coverings.
- 16.5 Tape - Duct tape or other type capable of sealing joints of adjacent sheets or plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions including use of amended water.
- 16.6 Adhesives - capable of sealing joints of adjacent sheets or plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions including use of amended water.
- 16.7 Surfactant (wetting agent) - shall consist of 50% polyoxyethylene ether and 50% of (polyoxyethylene) (polyglycol) ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce with water to provide a concentration of one ounce surfactant to 3 to 5 gallons of water or equivalent depending on brand and manufacturer's instructions.
- 16.8 Impermeable Containers - suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. (The containers shall be labeled in accordance with OSHA regulation 29 CFR 1926.1101). Containers must be both air and watertight and include tags or labels affixed which provide the name, telephone number of the Owner facility from which the asbestos-containing material was removed.
- 16.9 Glovebags - shall be designed as defined in contract specification definition.
- 16.10 Water Sprayers - as used for removal work shall be airless sprayers.
- 16.11 Air Purifying Equipment - A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2-79 (local exhaust ventilation requirements) and EPA guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings Appendix F: shall be utilized so as to provide one workplace air change every 15 minutes.

**To calculate total air flow requirement:**

$$\text{Total ft}^3/\text{min} = \frac{\text{Vol of Work Area (in ft}^3\text{)}}{15 \text{ Min}}$$

**To calculate the number of units needed for the abatement:**

$$\text{Number of Units Needed} = \frac{(\text{Total ft}^3/\text{min})}{(\text{Capacity of Unit in ft}^3/\text{min})}$$

If air supplied respirators are utilized, estimate the volume of supplied air and add to workplace air volume when calculating ventilation requirements. For small enclosures and glovebags, a HEPA filtered vacuum system may be utilized to provide negative air pressure.

- 16.12** HEPA Vacuums - A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.
- 16.13** Other Equipment - A sufficient supply of scaffolds, ladders and lifts as required to accomplish work and that meet all applicable safety regulations. All equipment must be wet-wiped and HEPA vacuumed to remove all visible debris prior to leaving the work area.
- 16.14** Warning Labels and Signs - As required by OSHA (Regulation 29 CFR 1926.1101) and in official language. (See Section 12.0)
- 16.15** Other Materials - provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work.



## 17.0 Execution of Abatement Work

### 17.1 General Cleaning

Contractor will provide on-site containers for the collection of non-asbestos debris and waste. The jobsite shall be kept free from the accumulation of non-asbestos waste or debris. Any waste disposed or stored in asbestos disposal bags or containers shall be considered as asbestos waste and treated as such. The use of pre-labeled asbestos disposal bags or containers to collect non-asbestos waste outside the containment area shall not be permitted.

### 17.2 Work Areas

- 17.2.1 Post approved caution signs in accordance with OSHA regulation 29 CFR 1926.1101 (see Section 12.0).
- 17.2.2 Shut down and lock out electrical power to work area where using wet gross removal methods. Provide temporary power and insure the safe installation of same.
- 17.2.3 Shut down, lock out or isolate heating, ventilation and air conditioning (HVAC) components to all work areas. Clean and seal all vents or HVAC components within work area.
- 17.2.4 Filters from HVAC systems shall be carefully removed and disposed of as asbestos waste after abatement is complete.
- 17.2.5 A minimum of one worker to be designated to remain outside containment at all times to maintain security and keep outside area picked up and clean.

### 17.3 Pre-Cleaning

- 17.3.1 Pre-Clean all surfaces in the work area using HEPA filtered vacuuming and/or wet wiping methods. Do not use dry sweeping or vacuums not equipped with HEPA filters. Extra precautions must be taken to prevent the disturbance of ACM during pre-cleaning.
- 17.3.2 All pre-cleaning methods shall be employed to prevent damage to building materials.
- 17.3.3 Pre-Seal all windows, corridors, doorways, ducts, grills, diffusers, grates, drains and any other opening between the gross removal work areas and uncontaminated areas with two layer of 6 mil plastic sheeting and tape.
- 17.3.4 Cover floors in the gross removal work areas with a minimum of two layers of 6 mil plastic (unless the flooring is to be removed). Extend floor sheeting at least 12" up the sidewalls. Additional layers of protection for carpet and tile floors is advised. Any damage to floor coverings during the abatement project is the Contractor's responsibility and if not repaired to original condition, Contractor to install new floor covering.
- 17.3.5 Plastic shall be sized to minimize seams. If an area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. A distance of at least 6 feet between seams is sufficient. Do not locate any seams at wall/floor joints.

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- 17.3.6 Wall sheeting will overlap floor sheeting by at least 12" beyond the wall/floor joint to provide a better seal. It shall be secured to prevent it from falling away from the walls when negative pressure is being utilized. Any damage to walls during the abatement project is the Contractor's responsibility.
- 17.3.7 Construct worker and equipment decontamination units at all locations where workers or equipment will enter/exit a work area. Plans for the construction and location of the units shall be submitted by the Contractor in the Pre-Work Submittal.
- 17.3.8 Wastewater containing asbestos shall be collected and treated as ACM or filtered before disposal into a sanitary sewer.
- 17.3.9 Following a work shift, the worker decontamination unit should be cleaned and the shower room disinfected. The equipment room shall be HEPA vacuumed and wet cleaned.
- 17.3.10 Install and initiate negative pressure ventilation equipment as needed to provide one air change within the work area every 15 minutes. Openings made in the enclosure system to accommodate these units shall be made airtight with tape and/or caulking as needed. If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional reinforcement. Insure that adequate power supply is available to satisfy the requirements of the ventilating units. Negative pressure ventilation units shall be exhausted to the outside of the building whenever feasible. They shall not be exhausted into occupied areas of the building. Twelve inch wire reinforced extension ducting shall be used to reach from the work area to the outside when required. Careful installation, air monitoring and daily inspections shall be done to insure that the ducting does not release fibers into uncontaminated building area.
- 17.3.11 Provide make-up air openings to avoid damage to barriers but to maintain negative pressure in excess of .02 inches of water differential. Documentation of negative pressure must be obtained by means of a manometer. Documentation of calibration of mentioned equipment must be provided.
- 17.3.12 Maintain operation of negative air units until abatement operation completion or signified by acceptance of final air clearance sampling results.
- 17.3.13 Clearly identify and maintain emergency and fire exits from the work area.
- 17.3.14 Remove, clean and enclose in polyethylene the ceiling mounted objects such as lights, fire alarm systems and other items that may interfere with the abatement process and were not previously cleaned and sealed off. Utilize localized spraying of amended water and/or HEPA vacuums to reduce fiber dispersal during the removal of these fixtures. After abatement work is complete, reinstall ceiling mounted objects other than surface mounted light fixtures.
- 17.3.15 **Statement on Filters**
- Water Filter: Provide staged filter units on drain lines or any water source which carries asbestos-contaminated water from the work area.

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The filtration shall incorporate disposable filter elements as follows:

The primary filter shall filter particles to 100 microns. Intermediary filters of 50 microns, 25 microns and 5 microns shall be provided before the final filter. The final filter shall filter particles 0.3 microns or greater.

- 17.4 Fresh towels, soap and shampoo shall be available in the showers at all times.
- 17.5 A disposal bag for contaminated filters shall be provided in the shower room.
- 17.6 Work Area Corridors, doorways or cased openings not to be used for passage during the abatement work shall be sealed from uncontaminated areas of the building by construction of critical barriers. Walls shall be made of wood or metal studs. Plywood of at least 3/8" thickness shall be applied to the work area side. Cover both partition sides with a double layer of 6 mil plastic with staggered joints and seal in place. Tape and caulk edges of barrier to form an airtight seal.
- 17.7 All plastic barriers inside the workplace and decontamination units shall be inspected prior to the start and following the completion of daily abatement activities. These inspections shall be documented in the daily project log.
- 17.8 Damage or defects to barriers shall be repaired immediately.

## 18.0 Decontamination (To Be Posted In The Work Area)

- 18.1 All personnel entering the work area shall read and be familiar with posted regulations, respiratory protection requirements and emergency procedures. All personnel who enter the work area shall sign the visitor's log upon entry and exit of work area. Each worker and authorized visitor shall, upon entering the job-site, remove street clothes in the clean change room and put on a respirator and protective clothing before entering the equipment and access areas or the work area. When changing from street clothes to disposable work clothes, the worker will remove all street clothing and then dress in only the disposable suit and 100% nylon clothing.
- 18.2 Worker decontamination - each worker and authorized visitor shall, each time he leaves the work area; remove gross contamination from clothing before leaving the work area; proceed to the equipment area and remove all clothing, except respirators and nylon clothing if worn, still wearing the respirator proceed naked to the showers; clean the outside of the respirator; thoroughly shampoo and wash themselves; and wash and rinse the inside of the respirator.
- 18.3 Following showering and drying off with disposable towels, each worker and authorized visitor shall proceed directly to the clean change room and dress in street clothes at the end of each day's work, or in clean coveralls before eating, smoking, drinking, or re-entering the work area.
- 18.4 Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or seal in disposal container to remain unopened until inside next containment area. Place contaminated work suits in receptacles for disposal with other asbestos-contaminated materials.
- 18.5 Workers removing waste containers from the equipment decontamination enclosure shall enter the washroom from outside wearing a respirator and dressed in clean overalls. No worker shall use this system as a means to leave or enter the work area.
- 18.6 Worker shall not eat, drink, smoke, chew gum, or tobacco in the work area or while inside of a decontamination unit.
- 18.7 Clean external surfaces of contaminated containers and equipment thoroughly by wet sponging. HEPA vacuum before moving such items into the equipment decontamination enclosure system washroom for final cleaning and removal to uncontaminated areas. Insure that personnel do not leave work areas through the equipment decontamination enclosure system.
- 18.8 Contractor shall notify Owner's Representative of work area preparation for an inspection prior to any removal of ACM.

## 19.0 Gross Removal Procedures

- 19.1 Wet all asbestos-containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. The use of high-pressure sprayers shall not be permitted.
- 19.2 Saturated asbestos-containing material shall be removed in manageable sections. Removed material shall be containerized while wet.
- 19.3 Material removed from building structures or components shall not be dropped or thrown more than one (1) floor level. Asbestos-containing material shall be containerized at elevated levels for disposal and then lowered or shall be placed onto inclined chutes which empty into approved containers.
- 19.4 Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Any ACM removed with metal lath or material, which may puncture bags shall be wrapped in plastic and cardboard and placed in drums for disposal at landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops.
- 19.5 Large components removed must be adequately wetted intact, then wrapped in 2 layers of 6 mil polyethylene sheeting secured with tape for transport to the landfill.
- 19.6 Wet clean all surfaces to insure all residual fibers have been removed.
- 19.7 The Project Superintendent shall notify the Owner's Representative of the work area's readiness for visual inspection.

## **20.0 Air Monitoring and Clearance Testing**

- 20.1** Analysis of area and PCM clearance samples shall be performed by the Owner's Representative's at EEG's on-site laboratory. The Contractor will be responsible for providing personal monitoring of his employees per 29 CFR 1926.1101. A minimum of two personal samples shall be collected for each 8-hour work shift with a combined sample volume of 960 liters and using a 25mm cassette, set at 1.6 to 2.5 liters per minute. In addition, the Contractor will collect a minimum of 1 Excursion Limit (EL) sample, which is representative of the highest personnel exposure per activity. Results of these samples shall be completed and made available to the Consultant within 24 hours. If samples are unreadable due to overloading, wet filters or any other reason, the Consultant may require increased worker respiratory protection.
- 20.2** A background sample from each work area shall be performed by the Owner's Representative's on-site laboratory to provide a reference baseline level of ambient fiber concentrations. The Owner's representative will also take a sample from outside air.
- 20.3** After a work area has passed the Owner's Representative's visual inspection, aggressive sampling shall be performed.
- 20.4** The final plastic critical barriers around the abatement area are to remain in place for the clearance-sampling period.
- 20.5** The PCM clearance samples will be collected by the Owner's Representative and analyzed at EEG's field laboratory on site. The results of these tests shall be <.01 f/cc. PCM final clearance data shall be completed and made available to the owner and contractor within 2 hours.
- 20.6** The Owner will incur costs for first clearance test series. If the Contractor fails the first series or requires any additional air monitoring, the cost for the Owner's air monitoring personnel and sample analysis shall be the responsibility of the Contractor.
- 20.7** If the first clearance test results satisfactorily pass, the post-removal encapsulation of surfaces from which asbestos has been removed shall take place. The encapsulant must be colored (non-white) and satisfactorily adhere to the substrate or an acceptable substitute shall be used.
- 20.8** After the encapsulation has been completed and any mist has settled, the remaining plastic sheeting, seals, decontamination enclosures and debris shall be carefully removed and disposed of as asbestos waste.
- 20.9** Contractor shall then wet-wipe and HEPA vacuum the work area prior to re-occupancy or replacement material.
- 20.10** If clearance testing results are unacceptable, the work area shall remain sealed until cleared and all costs associated with retesting shall be the responsibility of the Contractor.

## **21.0 Glovebag Operations**

- 21.1** Any glovebag to be utilized by the Contractor must be approved by the Owner's Representative. It must be utilized inside a full work area containment or use a negative pressure glovebag.
- 21.2** The Contractor shall place plastic sheeting below the work area in quantity sufficient to collect any gross debris.
- 21.3** Glovebags shall be installed so that they completely cover the pipe or other structure where asbestos work is to be done. Glovebags are installed by cutting the sides of the glovebag to fit the size of the pipe from which asbestos is to be removed. The glovebag is attached to the pipe by folding the open edges together and securely sealing them with tape. All openings in the glovebag must be sealed with duct tape or equivalent material. The bottom seam of the glovebag must also be sealed with duct tape or equivalent to prevent any leakage from the bag that may result from a defect in the bottom seam.
- 21.4** The employee who is performing the asbestos removal with the glovebag must have at least a full face dual-cartridge HEPA equipped respirator; respirators should be worn by employees who are in close contact with the glovebag and who may thus be exposed as a result of small gaps in the seams of the bag or holes punched through the bag by a razor knife or a piece of wire mesh.
- 21.5** The removed asbestos material from the pipe or other surface that has fallen into the enclosed bag must be thoroughly wetted with a wetting agent (applied with an airless sprayer through the precut port provided in most glovebags or applied through a small hole in the bag).
- 21.6** Once the asbestos material has been thoroughly wetted, it can be removed from the pipe. The choice of tool to use to remove the asbestos-containing material depends on the type of material to be removed. Painted canvas can be cut with a razor knife and peeled away from the asbestos-containing material underneath. Once the canvas has been peeled away, the asbestos-containing material underneath may be dry, in which case it should be resprayed with a wetting agent to insure that it generates as little dust as possible when removed. If the asbestos-containing material is covered with wire mesh, the mesh should be cut with nips, tin snips, or other appropriate tool and removed.
- A wetting agent must then be used to spray any layer of dry material that is exposed beneath the mesh, the surface of the stripped underlying structure and the inside of the glovebag.
- 21.7** After removal of the layer of asbestos-containing material, the pipe or surface from which asbestos has been removed must be thoroughly cleaned with a wire brush and wet-wiped with a wetting agent until no traces of the asbestos-containing material can be seen. The raw ends of the insulation to remain in place must be sealed airtight prior to removal of the glovebag.
- 21.8** When the asbestos removal and encapsulation have been completed, a vacuum hose from a HEPA filtered vacuum must be inserted into the glovebag through the port to remove any air in the bag that may contain asbestos fibers. When the air has been removed from the bag, the bag should be squeezed tightly (as close to the top as possible), twisted and sealed with tape, to keep the asbestos materials safely in the bottom of the bag. The HEPA vacuum can then be removed from the bag and the glovebag itself can be removed from the work area to be disposed of properly.
- 21.9** HEPA vacuum the work area for any residual material.

## 22.0 Disposal Procedures

- 22.1 If necessary, as the work progresses, to prevent exceeding available storage capacity on site, sealed and labeled containers of asbestos-containing waste shall be removed and transported to the prearranged disposal location.
- 22.2 Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable state and local guidelines and regulations.
- 22.3 All dump receipts shall be delivered to the Owner's Representative for his records. The Disposal Form shall be delivered to the Owner's Representative after each disposal.
- 22.4 Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck for transportation. As per OSHA regulations, warning signs or labels shall be displayed on both sides and the rear of the vehicle or unit used to transport asbestos waste material. Such signs or labels shall be of sufficient size to be read from at least a distance of fifteen (15) feet.
- 22.5 The enclosed cargo area of the truck shall be free of debris and lined with 6 mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the sidewalls. Wall sheeting shall be overlapped and taped into place.
- 22.6 Personnel loading asbestos-containing waste shall be protected by disposable clothing including head, body and foot protection and at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters. The color of protective clothing worn outside the work area shall be a different color than that worn inside the work area.
- 22.7 Any debris or residue observed on containers or surfaces outside of the work area resulting from clean up or disposal activities shall be immediately cleaned using HEPA filtered vacuum equipment and/or wet methods as appropriate.
- 22.8 **Disposal at the Landfill**
- 22.8.1 Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos-containing waste.
- 22.8.2 Bags, drums and components shall be inspected, as they are off-loaded at the disposal site. Material in damaged containers shall be repacked in empty drums or bags as necessary.
- 22.8.3 Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of trucks.
- 22.8.4 Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
- 22.8.5 Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria.



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- 22.8.6** If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator, Contractor shall supply protective clothing and respiratory protection for the duration of this operation.
- 22.8.7** The Owner/operator shall maintain accurate written records of the disposal of all asbestos-containing waste materials. Records shall contain the following information:
- 22.8.7.1** Origin of waste, including name and address of facility and the name of facility Owner;
  - 22.8.7.2** Owner/operator's name, address, telephone number and (where applicable) Arkansas asbestos contractor license number;
  - 22.8.7.3** Waste disposal site name, address, telephone number and (for Arkansas disposal site) Arkansas Solid Waste permit number;
  - 22.8.7.4** List of all asbestos waste materials being disposed, including a description of each type of material;
  - 22.8.7.5** Number and type of containers for each type of asbestos waste material;
  - 22.8.7.6** Total quantity of each type of asbestos waste material being disposed (in square, linear or cubic feet); and
  - 22.8.7.7** Name of waste transporter and dates materials was transported to landfill.

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## DEFINITIONS

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## II. DEFINITIONS

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### **Abatement**

Procedures to control fiber release from asbestos-containing materials, including removal, encapsulation, enclosure, demolition.

### **AIHA**

American Industrial Hygiene Association  
475 Wolf Ledges Parkway  
Akron, Ohio 44311

### **Airlock**

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

### **Air Monitoring**

The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure normally utilized for asbestos follows the NIOSH Standard Analytical Method for Asbestos in Air P&CAM 239 or Method 7400. For clearance air monitoring, electron microscopy methods may be utilized for lower deductibility and specific fiber identification.

### **Air Sampling Professional**

The professional contracted or employed by the Building Owner to supervise and/or conduct air monitoring and analysis schemes.

### **Amended water**

Water to which a surfactant has been added.

### **ANSI**

American National Standards Institute  
1430 Broadway  
New York, New York 10018

### **Asbestos**

The asbestos form varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, actinolite and tremolite.

### **Asbestos-Containing Material (ACM)**

Asbestos or any material which contains more than 1% of any form of asbestos.

### **Asbestos-Containing Waste Material**

Any waste that contains more than 1% asbestos by volume and is generated by a source subject to the provisions of the Arkansas regulation. This term includes all soft and hard asbestos-containing materials that can be removed or altered in any manner, which could release fibers into the air. This term also applies to any materials contaminated with asbestos, including but not limited to, equipment and clothing.

### **Asbestos Project Administrator**

An individual qualified by virtue of experience and education, designated as the Owner's Representative and responsible for overseeing the asbestos abatement project.

### **ASTM**

American Society For Testing and Materials  
1916 Race Street  
Philadelphia, PA 19103

### **Authorized Visitor**

The Building Owner (and any designated representatives) and any representative of a regulatory or other agency having jurisdiction over the project.

### **Building Owner**

The Owner or his authorized representative.

### **Clean Room**

An uncontaminated area or room, which is a part of the worker decontamination enclosure system with provisions for storage of worker's street clothes and clean protective equipment.

### **Contractor**

The individual and/or business with which the Building Owner arranges to perform the asbestos abatement.

### **Curtained Doorway**

A device to allow ingress or egress from one room to another, while permitting minimal air movement between the rooms. The device is typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway.

### **Decontamination Enclosure System**

A series of connected rooms, separated from the work area and from each other by air locks, for the decontamination of workers and equipment.

### **Demolition**

The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operation.

### **Encapsulation**

In this contract, it refers to the coating of surfaces from which ACM has been removed to prevent the possible release of residual asbestos fibers.

### **EPA**

U.S. Environmental Protection Agency  
401 M Street S.W.  
Washington, D.C. 20460

### **Equipment Decontamination Enclosure System**

That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom and holding area.

### **Equipment Room**

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

### **Facility**

Any institutional, commercial or industrial structure, installation or building (excluding apartment buildings having no more than four dwelling units) or ships, active and inactive waste disposal sites and storage sites.

## II. DEFINITIONS

### **Fixed Object**

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

### **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 a non-contained (plasticized) work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic), two inward projecting long sleeves, 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 material to be removed and contains all asbestos fibers released during the process. All workers who are permitted to use the glovebag technique must be highly trained, experienced and skilled in this method.

### **HVAC**

Heating, ventilation and air conditioning system.

### **HEPA Filter**

A high efficiency particulate air filter capable of removing particles >0.3 microns in diameter with 99.97% efficiency.

### **HEPA Vacuum**

A vacuum system equipped with HEPA filtration.

### **Holding Area**

A chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area. The holding area comprises an airlock.

### **Movable Object**

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

### **Negative Pressure Ventilation System**

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

### **NESHAP**

The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

### **NIOSH**

The National Institute for Occupational Safety and Health  
ODC - NIOSH  
Building J N.E. Room 3007  
Atlanta, Georgia 30333

### **NIST NVLAP**

National Institute Standards and Technology's National Voluntary Laboratory Accreditation Program

### **OSHA**

The Occupational Safety and Health Administration  
200 Constitution Avenue  
Washington, D.C. 20210

### **Outside Air**

The air outside buildings and structures.

### **Plasticize**

To cover floors and walls with plastic sheeting as herein specified.

### **Prior Experience**

Experience required of the Contractor on asbestos projects of similar nature and scope to insure capability of performing the asbestos abatement in a satisfactory manner. Similarities shall be in areas related to material composition, project size, abatement methods required, number of employees and the engineering, work practice and personal protection controls required.

### **Removal**

The stripping of any asbestos-containing materials from surfaces or components of a facility.

### **Shower Room**

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

### **Staging Area**

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

### **Strip**

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

### **Surfactant**

A chemical wetting agent added to water to improve penetration.

### **Visible Emissions**

Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

### **Waste Transfer Airlock**

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

### **Wet Cleaning**

The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

### **Work Area**

Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is a work area, which has been sealed, plasticized and equipped with a decontamination enclosure system. A non-contained work area is an isolated or controlled-access work area, which has not been plasticized nor equipped with a decontamination enclosure system.

## II. DEFINITIONS

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### **Worker Decontamination Enclosure**

A decontamination system consisting of a clean room, a shower room and an equipment room separated from each other and from the work area airlocks and contained doorways. This system is used for all worker entrances and exits in the work area and for equipment and waste pass out for small jobs.

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APPENDIX A  
*ADEQ Notice of Intent Form*

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APPENDIX B  
*Close-Out Document Checklist*

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## APPENDIX B

### Close-Out Document Checklist

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- |                                 |  |                                  |  |
|---------------------------------|--|----------------------------------|--|
| <input type="checkbox"/> 13.2   | Contractor shall submit two (2) bound copies of their Project Manual containing the following information including all AHERA record keeping requirements response actions (40 CFR Part 763.94) to the Russellville office of EEG, Inc. within 14 days after receipt of "Owner's Release".                       | <input type="checkbox"/> 13.2.7  | Statement, which is signed by the Owner that the project has received final acceptance from the Owner.                       |
| <input type="checkbox"/> 13.2.1 | Current insurance certificates and release from surety.  | <input type="checkbox"/> 13.2.8  | Certify that all rental vehicles and equipment, if any, have been visually inspected and cleared by the Project Supervisor.  |
| <input type="checkbox"/> 13.2.2 | Abatement contract with any change orders that may apply.  | <input type="checkbox"/> 13.2.9  | Copies of all air monitoring data including area, personal and manometer charts.   |
| <input type="checkbox"/> 13.2.3 | Current Asbestos Abatement License   | <input type="checkbox"/> 13.2.10 | Employee information, certificates, physicals and respirator fit tests.  |
| <input type="checkbox"/> 13.2.4 | Written notification to the Arkansas Department of Environmental Quality (ADEQ) is required for this project. The Contractor shall follow all current NESHAP requirements and provide the Consultant with a copy of any notices (see Appendix A).  | <input type="checkbox"/> 13.2.11 | Daily Employee logs and supervisor reports with project schedule as accomplished.  |
| <input type="checkbox"/> 13.2.5 | Guarantee of Work which shall read "We hereby guarantee all work performed by us on the (Name of Contract) project to be free from defective materials and workmanship for a period of one (1) year or such longer period of time as may be called for in the contract documents for such portions of the work". | <input type="checkbox"/> 13.2.12 | Contractor's Affidavit of Release of Liens (AIA Document G706 and G706A) and consent of Surety (AIA Document G707 or G707A). |
| <input type="checkbox"/> 13.2.6 | Copies of any correspondence with authorities and permits.   | <input type="checkbox"/> 13.2.13 | Identification of any continuing Owner responsibilities required by applicable regulations.                                  |
|                                 |  | <input type="checkbox"/> 13.2.14 | Waste disposal manifest.   |



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APPENDIX C  
*Visual Clearance and Clearance of Project Procedures*

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## APPENDIX C

### Procedures for Visual Inspection and Clearance of Project Sequence

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- A. After an abatement area is clean of asbestos, the following final clearance sequence shall be performed. The Owner's Representative shall conduct a preliminary visual inspection upon request of the Contractor. Upon notification of the Owner's Representative, the Contractor shall perform "lockdown" procedures, and then remove the outer layer of plastic sheeting and perform wet-wiping and HEPA vacuuming of all surfaces. The Owner's Representative then shall perform a second-stage visual inspection. Upon notification from the Owner's Representative, all plastic sheeting (except critical barriers) shall be removed and final wet-wiping and HEPA vacuuming performed. The Owner's Representative shall then perform a final visual inspection. After successful completion of the final visual inspection, final air clearance monitoring shall be performed by the Owner's Representative, using aggressive sampling methods. A PCM level of less than .01 f/cc in the work area at Fort Chaffee Building 3602 and a positive result of visual inspection shall be considered a clean area. After a successful "Final Inspection", the Contractor will remove all barriers.
- B. If non-compliance is found in any such test, repeated cleaning and sampling will be done until the abatement area is in compliance. The cost of all re-cleaning and repeating of Final Inspections shall be paid by the Contractor.
- C. After the Contractor has had a successful "Final Inspection", taken down barriers and removed all property, the Contractor shall conduct an additional wipe-down of the abatement area, to leave a dust-free area.

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APPENDIX D  
*Contractor's Guidelines*

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## APPENDIX D

### Contractor's Guidelines

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EEG, Inc. has been employed by the Owner to manage this project and protect their short and long-term interests. The following guidelines have been developed to assist you in understanding this relationship. EEG, Inc. representatives are by contract responsible for ensuring the work is carried out in the safest, most professional manner possible. In order to accomplish this, EEG, Inc. will work directly with you as the designated Owner's Representative. You in turn will be held responsible for the progress and action of all Contractor's and subcontractor's workers. By working through this structure, this project will go smoothly and safely for all interested parties.

1. You are responsible for the job you contract. Walk the job-site with an EEG, Inc. Project Manager and make sure you understand the project's scope of work. Read and become familiar with the project specifications. These specs will be used to answer most of your questions.
2. You are responsible for the supervision of the men you place on the project. Your crews, your crews' performance, the quality of your work, the quality of your crews' work and their conduct is your responsibility.
3. All aspects of this project will be handled on a professional basis.
4. Superintendent is responsible for keeping a project timeframe with an up-to-date bar chart report for review of the EEG, Inc. Project Manager on site.
5. Contractor's Superintendent will be on site at all times when work is taking place. The Superintendent will also be responsible for knowing what's going on in containment at all times.
6. All electrical equipment must have safety device intact and operational.
7. No unnecessary communication sessions on the job-site. No congregating on the job-site before or after the days work.
8. Contractor is to stay within their work area. No wandering around the project site.
9. Respirators and protective clothing will be worn properly. Anyone found not wearing his or her respirator properly will be dismissed from the project. Protective equipment shall be put on in the clean room of the decon and worn only inside containment.
10. Contractor employee's fighting on site will be automatically dismissed.
11. No smoking or dipping will be allowed on job-site. Smoking will be allowed in a designated outside area only.
12. Contractor will be responsible for keeping inside and outside work areas clean. Keep the job-site looking organized.
13. No alcoholic beverages or narcotics of any form shall be allowed on job-site. Any worker who shows signs of being under the influence of such drugs shall be removed from the job-site and may be permanently dismissed from the project.
14. Contractor's representatives shall not speak with outside parties (owner's representatives, media, building occupants, etc.) for any reason. All communications shall be performed by the EEG, Inc. Project Manager. The Project Superintendent shall instruct parties likewise.
15. Obscene language and actions shall not be used on the project site including T-shirts, caps, or other clothing with obscene print.

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*Environmental Enterprise Group, Inc. (EEG)*  
*Project Manager*

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*Date*

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*Contractor's Superintendent*

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*Date*

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APPENDIX E  
*Drawing*

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APPENDIX F  
*Certifications*

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APPENDIX G  
*Bid Form*

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Environmental Enterprise Group, Inc.

PROVIDING CUSTOMIZED SERVICES NATIONWIDE

A 3W Company

# BID FORM

BID DATE	BID TIME	LOCATION
To Be Determined	To Be Determined	To Be Determined

BID FROM: \_\_\_\_\_  
\_\_\_\_\_

BID TO: To Be Determined

PROJECT: Asbestos Abatement ♦ Building 3602 ♦ Fort Chaffee, Arkansas

Gentlemen:

1. Having carefully examined the premises and all conditions affecting the proposed abatement project, the undersigned proposes to provide all labor, materials, services, and equipment necessary for, or incidental to, the execution of the project within the time set forth for the lump sum base bid of:

Base Bid \_\_\_\_\_ Number of shifts to complete work \_\_\_\_\_

\$

*Dollar Amount Is To Be Shown Numerically and in Words*

2. Completion Date: Bidder agrees that all work will be substantially complete and ready for final payment in accordance with the forthcoming Contract Documents by *to be determined*. The undersigned, in compliance with the Contract Documents for the execution of the above named project, does hereby declare:
  - a. That the undersigned understands that the owner reserves the right to reject any and all bids and to waive any formality.
  - b. That if awarded the Contract, the undersigned will enter into an Agreement, on AIA Form A101 or other acceptable substitute upon receipt of the Intent to Award, will commence work as specified, and will complete the Contract fully by the Completion Date indicated. Should the undersigned fail to fully begin and complete the work within the above stated time, he shall pay the Owner as fixed, agreed and liquidated damages and not as a penalty, the sum of One Thousand Five Hundred Dollars (\$1,500.00) for each calendar day of delay until the work is begun, completed or accepted.
  - c. That this bid may not be withdrawn for a period of 30 days after the bid opening.
  - d. The undersigned understands it is the owner's intent to execute this contract within the limits established by the funds appropriated for the project.

3. The following documents are attached to and made a condition of this Bid.



- a. Bid security
- b. Bid submittals (per Section 6.5.1 through 6.5.1.5.6)

4. The undersigned acknowledges receipt of and inclusion as a part of the Contract Documents the following addenda:

NUMBER	DATE

*Respectfully Submitted:*

\_\_\_\_\_  
*Name of Bidder (Typed or Printed)*

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
*Address*

By: \_\_\_\_\_  
*Signature and Title*

\_\_\_\_\_  
*Contractor's License Number*

\_\_\_\_\_  
*Date of Bid*