Technical Specifications
For
On-Call Industrial Hygiene
Monitoring
&
Environmental Services
For the
University of Maryland, Baltimore County

September 2011

This document is provided separately as part of the solicitation documents for UMBC’s On Call IH Monitoring Services contract, RFP #BC-20761-R dated 9/22/11
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SECTION 01013 - SUMMARY OF THE WORK – IH MONITORING SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Technical Specifications for Hazardous Materials Abatement for the University System of
   Maryland in the Baltimore Region, August 1, 2000.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. This Contract consists of On-Call Industrial Hygiene (IH) Monitoring Services
   performed by the Consultant at the University of Maryland, Baltimore County (UMBC).

   1. Work Location: UMBC, 1000 Hilltop Circle, Baltimore, MD 21250.

   2. Owner: The Owner is UMBC. A Designated University Representative (DUR) is
      defined as follows for each USM institution in the Baltimore Region:

         a. UMBC Project Manager from institution’s Physical Plant Department;

         b. UMBC ESH Representative.

B. Contract Documents following were prepared by UMBC Procurement Services, 1000
   Hilltop Circle, Baltimore, MD 21250:

   1. Request for Proposal for On-Call Industrial Hygiene Monitoring Contracting at the
      University of Maryland, Baltimore County, RFP #BC-_______ dated September
      __, 2011.
C. **The Work** consists of furnishing all necessary IH services, qualified personnel, materials, equipment, analytical support, transportation and supervision, not otherwise provided by the University, as needed to provide technical support and oversight of hazard abatement work as necessary, in various contexts, and performed by Abatement Contractors as directed by the University.

1. **Categories of Work:** The assigned Project will describe one of the four following categories of IH services required:

   a. **Site Hazard Assessments:** Provide, in sufficient quantity to meet anticipated site investigation needs, the services of IH personnel to perform the following functions:

      i) At University’s request, visit specific sites to assess potential hazards and, based on results of sampling and analysis, make recommendations for remedial or corrective action.

         a) Where available, review previous sampling data, as-built drawings, aerial photographs, and/or archived specifications to assess pre-existing conditions and to outline relevant architectural, mechanical and structural elements of the subject building.

         b) Where directed by the DUR, conduct site reconnaissance and interview key personnel to identify recognizable environmental conditions that potentially compromise environmental health and safety.

         c) Submit sampling scheme to collect air, soil, water, dust wipe, or material bulk samples of subject environmental parameters for laboratory analysis, in accordance with procedures set forth in these Contract Documents, and current professional industrial hygiene standards.

         d) Report imminent hazards represented by existing conditions to the University without delay.

      ii) Furnish University with a written report not later than (5) days following completion of initial visit unless otherwise stated in writing.

         a) Faster rates of turnaround may be requested, as needed.

         b) The report shall discuss findings and recommendations.

      iii) Conduct investigations in accordance with applicable regulations, existing guidelines as indicated in the Contract Documents, and current professional industrial hygiene standards.
b. **Abatement Project Oversight:** Provide, in sufficient quantity to meet anticipated Abatement Project oversight needs, the services of a Certified Industrial Hygienist (CIH) to perform the following administrative functions:

i) Receive and evaluate submittals supplied by the University’s Abatement Contractor.

ii) Attend and evaluate conferences and other meetings, where requested by the University, to assist and advise the University in addressing technical questions.

iii) Consult with the University as the abatement work and associated monitoring progress.

iv) Communicate with the University’s Abatement Contractor, as often as feasible, by means of issuance of written advisement or directives.

v) Guard the University against defects and deficiencies in the work of the University’s Abatement Contractor and report any observed defects or deficiencies to the University’s Project Manager without delay.

vi) Recommend to the University rejection of Abatement Contractor’s work that does not, in the CIH’s professional opinion, conform to Contract Documents, including referenced codes, standards, and regulations.

vii) Recommend to the University stop work orders when it may be necessary to evaluate the proper performance of the work. In discharging this responsibility, the CIH shall act through the University. No direct authority to stop work is delegated to the CIH by the University except where explicitly provided for elsewhere in these Contract Documents, or by written directive.

viii) Supervise project monitoring activities of on-site IH(s) (see paragraph c., following).

ix) Perform or supervise all other functions necessary to fulfill contractual obligations and document titled, “Technical Specifications for Asbestos Abatement for the University System of Maryland in the Baltimore Region,” August 1, 2000.
c. **Abatement Project Monitoring:** Provide, in sufficient quantity to meet anticipated monitoring needs, the services of Industrial Hygiene (IH) technical personnel under the direction of a CIH to perform the following functions:

i) **Oversee, advise, and approve in writing the Abatement Contractor’s preparation of work-site engineering controls, including, but not limited to**

a) Erection of primary and critical barriers;

b) Posting of warning signage and caution tape;

c) Installation of temporary facilities; and

d) Installation of special protection such as conduit, electrical control panels/boxes, and fire sprinkler heads and mechanical equipment.

ii) **Verify lock-out/tag-out of utilities and mechanical equipment controls, where applicable, and document name and title of person executing the procedure along with a brief description of the procedure.**

iii) **Document the Abatement Contractor’s implementation of work practices (e.g., wet methods) and compliance with applicable contract provisions including specified regulatory mandates, standards, and codes.**

iv) **Maintain a daily log detailing all activities occurring on the project including, but not limited to**

a) Ongoing containment barrier maintenance inspections;

b) Use, maintenance, cleaning, storage of personnel protective equipment;

c) Qualitative indications of pressure differential maintenance or, where applicable, quantitative manometer readings of pressure differential, including calibration data;

d) Location of sampling sites, activities occurring during sampling periods, IH personnel exposure monitoring results;

e) Sampling data, equipment calibrations, and results interpretations;

f) Violations of contract specifications;
g) Warnings issued for occupational safety violations that are not IH-related but covered under specific OSHA standards or OSHA’s general duty clause, including nature of violation, notification of University Project Manager, and resolution of violation(s); and

h) Stop Work Orders recommended by the IH or CIH, subsequently issued by the University’s Project Manager in writing, and issue resolution.

v) Maintain lists of Abatement Contractor’s personnel authorized to work at the Project site including, but not limited to

a) Training certificates and documentation of OSHA medical monitoring; and

b) Log Book documenting times and dates individuals entered and exited the work site.

vi) Verify proper installation of engineering controls by

a) Showing calculations used to implement engineering controls;

b) Indicating results of inspections for the adequacy of components on control devices along with indications that observed deficiencies wither were corrected before control device was used, or the control device was replaced; and

c) Showing results of any tests performed on control devices prior to use (e.g., smoke tests).

vii) Conduct air monitoring before, during, and after the work in accordance with Contract Documents, submitted sampling plans, and current professional standards indicating

a) Methods used;

b) Where and why sampling sites were selected;

c) Identification of equipment used and calibration data; and

d) Data generated from sampling.

viii) Interpret the significance of sampling results and prescribe appropriate response actions, if any.

ix) Generally document the conditions and events that are observed during the course of work.
x) When Abatement Contractor’s vacuums and negative pressure filtration unit(s) using high efficiency particulate air (HEPA) filters have passed visual inspection by the IH, a quantitative challenge test may be performed by the IH on all units in final position at the work site. This test shall be required whenever the Contractor has requested approval from the DUR to direct the exhaust air of negative pressure enclosures into interior building spaces. This challenge field test shall not be construed as the equivalent ANSI filter test, nor a substitute for that test.

a) The quantitative challenge test procedure shall be described in detail by the supervising CIH and be acceptable to the State;

b) The quantitative challenge test may be performed using a direct-reading particle counting instrument, such as a photometer, or any other instrument equivalent and providing at least a thousand-fold measure of filtration efficiency;

c) The procedure for the test shall be to challenge the HEPA unit on the intake side with a non-toxic particulate having a physical size approximating asbestos fibers. During the introduction of this test particulate into the intake air stream, samples shall be taken at the intake and exhaust sides of the HEPA unit;

d) Any unit showing more than 0.3 percent of the intake reading at the exhaust side shall be defective and shall not receive approval for use until the problem is corrected; and

e) Units approved shall be marked in indelible ink with a unique number and date.

d. **Project Re-occupancy Testing:** Provide, in sufficient quantity to meet anticipated monitoring needs, the services of IH personnel under the direction of a CIH to perform the following site clearance functions:

i) Visually inspect and, where applicable, authorize encapsulate lockdown and removal of temporary barriers and temporary facilities.

ii) Sample for re-occupancy and prepare clearance monitoring report(s), signed by the supervising CIH, including, but not limited to

a) Results of visual inspections;

b) Sampling procedures;

c) Sample locations and sampling rationale; and

d) Discussion of sample results.
iii) Provide an executive summary based on submittals that are deliverable documents to the University, including a brief description of the following:

   a) Significant events impacting on human health or the building environment, or that impacted timely work completion within the period allowed under the Project Work Order, if any;
   
   b) Recommendations on how to avoid significant events or problems in future projects; and
   
   c) Review of Abatement Contractor’s submittals as part of deliverable documents to the University.

2. **Scope of Work:** The University DUR will define the Scope of Work for the Consultant in the form of assigned Project Work Order(s) by subject location(s).

   a. **Existing Conditions.** Upon request, the University will make available any record drawing, utility plan, and other data pertinent to existing conditions. The University, however, can offer no assurances that such drawings, property, description, or other data are accurate, current or complete. Detailed drawings of subject areas may not be available for all Project Work Orders. Therefore, it is the responsibility of the Consultant to obtain the following information as it pertains to each assigned Project:

      i) Measurements and related details of subject areas;
      
      ii) Accurate engineering assessment of known and identified hazardous material locations (e.g., defined homogeneous areas of ACBMs and precise functional spaces in which subject ACBMs exist) involved in each assigned Project; and
      
      iii) Restrictions, limitations, and requirements for each assigned Project.

   b. **Consultant Proposal.** Assigned Projects over $25K will not commence until the Consultant has submitted a line item breakdown of the work scheduled to be accomplished.

      i) **Cost Breakdown.** Each cost proposal breakdown shall follow the format of the Unit Price Bid Schedule.
      
      ii) **Plan of Action.** An accompanying “Plan of Action” shall be included with each specific cost proposal as required herein.

         (a) **General.** Address the requirements to:

            i  Detect asbestos or other contaminants in subject building(s) or the outside environment;
            
            ii  Control exposure of employees performing monitoring;
and

iii Verify the efficacy of reoccupying subject building(s).

(b) **Sampling Plan(s)** shall be developed by the Consultant’s CIH, including, but not necessarily limited to:

i Purpose and scope of the study;

ii Location and layout of sampling areas;

iii Sequencing of sampling work, including manning schedule for each sequential step, time frame required to complete each sequential step, and daily work hours;

iv Analytical methods proposed,

v Interface with trades involved in the performance of the University’s abatement work, as applicable, and

vi Methods proposed for ensuring building occupant safety.

(c) **Alternate Procedures.** Where specified procedures cannot be followed due to technical or engineering prohibitions, or where a more cost/time effective approach is feasible

i Submit a request for variance to the University providing details of the recommended alternative; and

ii Alternatives shall comply with applicable codes, standards, and regulations, provide equal or greater protection than those procedures replaced, and be approved in writing by the University prior to implementation.

(d) **Review.** The Plan of Action will be reviewed by the DUR and other University representatives, as necessary (e.g., Department of Environmental, Health & Safety), prior to approval of each Project Work Order.

c. **Notice to Proceed/Purchase Order.** If the University is in agreement with estimates of work effort, and all required submittals are in order, then the DUR will issue a Notice to Proceed and/or an authorized Purchase Order.

3. **Project Initiation.** In addition to identifying specific project objectives, upon reasonable request the University shall provide the following to the Consultant with each Project Work Order or at each project initiation conference:

a. Name, phone number, and role of all persons representing the University for the Project, including
i) Project Manager and Project Administrator who will administer the IH Services contract for the specific project;

ii) Superintendent and Foreman of the University’s Abatement Contractor executing related abatement work; and

iii) Representative of the University designated as the IH Services contract manager.

b. Information on how utilities, such as, electric, steam, etc., will be deactivated and locked out/ tagged out by the University, University’s Abatement Contractor, or User Agency.

c. List of University’s personnel who will be authorized to enter the work site using approved personal protective equipment to perform emergency work or other operations necessary for the facility to maintain essential functions.

d. Site use restrictions, including

i) Information on hazards which could endanger Consultant’s employees or other work site occupants involved in the project.

ii) Information on emergency procedures required by the University.

iii) Information regarding the Using Agency’s or tenant’s restrictions on the execution of Contractor’s abatement work and Consultant’s work.

4. **Completion of Work:** The Consultant shall complete the Projects in the time required by the University’s work order.

5. **Work Rejection:** The University reserves the right to reject any Project work for any reason that is in the best interest of the University.

a. Submission of incomplete, inaccurate, and/or incorrect information or documentation as required in these Contract Documents shall be reason for automatic disqualification.

b. The Consultant agrees to either reimburse the University, or reduce the Contract amount by change order to cover all costs incurred by the university due to improper or incomplete industrial hygiene services, as specified by these Contract Documents, issued Project Work Orders, or governing authorities having jurisdiction.

c. The contract sum and/or schedule will be adjusted for additional industrial hygiene service work resulting from cases beyond the Consultant’s control.
6. **Stop Work:** If the Owner or the DUR presents a written stop work order, immediately and automatically conform to that stop work order. Do not recommence project work until authorized in writing by Owner or DUR.

### 1.3 WORK UNDER OTHER CONTRACTS

A. **Separate Contract:** As necessary, the Owner will awarded a separate contract for performance of Hazardous Materials abatement operations at the site. Those operations will be conducted simultaneously with work under this Contract.

B. **Cooperate** fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

### 1.4 WORK SEQUENCE

The Work will be conducted as work/task orders are developed by the University into projects for the Consultant on the basis noted in the RFP document.

### 1.5 HAZARDOUS MATERIALS:

A. **The Work** of this contract may involve activities that will disturb asbestos-containing materials (ACM) or presumed asbestos-containing materials (PACM). The location and type of ACM known to be present at the USM institutions is set forth in available building drawings and surveys provided by the DUR for the project. If at any time, ACM or PACM are found that will unavoidably impact upon the assigned project, immediately advise the University’s DUR in writing.

B. **The Work** of this contract may involve activities that will disturb lead-based paint (LBP) or other hazardous materials (e.g., polychlorinated biphenyls, mercury, laboratory chemicals and gases, radioactive materials, etc.). These materials may exist in a wide variety of contexts on the USM institutions, and the materials may require specialized investigation services. If at any time, unconfirmed or suspect hazardous materials are found that will unavoidably impact upon the assigned project, immediately advise the University’s DUR in writing.

### 1.6 HEALTH RISKS:

A. The disturbance or dislocation of ACM, LBP, or other hazardous materials may cause particulates or gases to be released into the atmosphere, thereby creating a potential health risk to workers and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the risk and of proper work procedures which must be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, LBP or other hazardous materials, take appropriate continuous measures as necessary to protect all building occupants from the risk of exposure to hazardous material releases. Such measures shall include the procedures and methods described.
herein, and compliance with regulations of applicable federal, state and local agencies.

1.7 CONSULTANT USE OF PREMISES

A. **General:** The Consultant shall limit use of the premises to the assigned project work order, so as to maximize access for University occupancy and use by the public.

B. **Use of the Site:** Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. **Owner Occupancy:** Allow for Owner occupancy and use by the public.

2. **Driveways and Entrances:** Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. **Use of the Existing Building:** Unless specifically directed by the University DUR, maintain the existing building in a weather tight condition throughout the project period. Repair damage caused by Consultant’s operations. Take all precautions necessary to protect the building and its occupants during the project period.

1. **Smoking:** Smoking or open fires will not be permitted within the building enclosure or on the premises.

2. **Toilet Rooms:** Except for toilet rooms designated for use by the Consultant's personnel, use of existing toilets within the building, by the Consultant’s personnel, will not be permitted.

1.8 OCCUPANCY REQUIREMENTS

A. **Full Owner Occupancy:** Depending on the Project, the Owner may occupy the site and existing building during the entire Project period. Cooperate with the Owner during consultant operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner's operations.

A. **Owner Access to Work Site:** University reserves the right to allow properly protected, Certified Level II, in-house staff or contractual tradesmen into the work site during the abatement project to make emergency repairs and/or adjustments to mechanical equipment necessary for the proper functioning of the facility. The University reserves the right to review individual credentials of Consultant personnel on the work site.
1.9 PERSONAL MONITORING:

   A. Owner will not perform air monitoring for the Consultant to meet Consultant's OSHA requirements for personal sampling or any other purpose.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION – 01013
SECTION 01043 - COORDINATION – INDUSTRIAL HYGIENE SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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


1.2 SUMMARY

A. This Section includes administrative and supervisory requirements necessary for coordinating Project operations including, but not necessarily limited to, the following:

1. General Project Coordination Procedures.
2. Plan of Action.
3. Contingency Plan.
5. Notifications.
6. Administrative and supervisory personnel.
7. Coordination meetings.
8. Record Keeping.
9. Special Reports.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 01013 – Summary of Work – IH Services; for general coordination procedures.
2. Section 01301 - Submittals – IH Services; for administrative procedures regarding submittals.

1.3 GENERAL PROJECT COORDINATION PROCEDURES

A. Owner Occupancy: Coordinate IH Services and scheduling with occupancy requirements of the DUR and, if necessary, the building(s) facility manager.
**B. Coordinate IH monitoring activities** included in various Sections of these Specifications to assure efficient and orderly completion of each part of the Work. Coordinate monitoring activities included under different Sections that depend on each other for proper execution.

1. Schedule monitoring and inspection activities in the sequence required to obtain the best results where execution of one part of the Work depends on execution of other components, before or after its own execution.

**C. Administrative Procedures:** Coordinate scheduling and timing of required administrative procedures with Abatement Contractor activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

### 1.4 PLAN OF ACTION:

**A. Prepare a detailed plan** of the procedures proposed for use in complying with the requirements of this specification. Include in the plan sampling strategies, procedures, and analytical methods, location of sample sites, methods to ensure safety of building occupants and contract employees, the sequencing of IH work, the interface of trades involved in the performance of work, and any alternate procedures.

**B. Submit the Plan of Action to the University for approval, prior to the start of work.**

### 1.5 CONTINGENCY PLAN:

**A. Contingency Plan:** Review and abide by the University’s contingency plan for emergencies including fire, accident, power failure, waste collection system failure, ventilation air system failure, or any other event that may require modification or abridgement of decontamination or work area isolation procedures.

1. Ensure the Abatement Contractor implements additional, specific procedures for decontamination of work area isolations, where applicable.

2. Note that nothing in this specification should impede safe exiting in accordance with NFPA 101 or providing of adequate medical attention in the event of an emergency.
B. **Emergency Services:** Telephone numbers of emergency services including, but not limited to fire, ambulance, doctor, hospital, police, Power Company and Telephone Company.

1. Emergency service – on campus phone – UMBC 410-455-5555

2. Emergency service – off campus phone -- 911

1.6 PROJECT DIRECTORY

A. **Develop a directory** of all entities involved in the Project. Include the Abatement Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site. Identify individuals, their duties and responsibilities. List business name, contact person, normal business and emergency telephone, pager and fax numbers and addresses of:

1. DUR.

2. Abatement Contractor’s General Superintendent, supervisory personnel and Contractor home office.

3. Emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, telephone company.

4. Local, state, and federal agencies with jurisdiction over the Project.

B. **Maintain a copy** of the Project Directory in the IH monitor’s work area.

1.7 NOTIFICATIONS

A. **Notification of other entities.** Verify that the Abatement Contractor has notified other entities at the job site of the nature of the hazard abatement activities, location of potentially hazardous materials, requirements relative to hazards set forth in these specifications and applicable regulations.

B. ** Notify University’s Department of Environmental Safety** after contacting emergency services.

C. **Notifications of Emergency:** Any individual at the job site may notify emergency service agencies if necessary without effect on this Contract or the Contract Sum.
1.8 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. **Supervisory Certified Industrial Hygienist (CIH):** Provide a full-time employee of the Consultant who is certified by the American Board of Industrial Hygiene (ABIH) in the Comprehensive Practice of Industrial Hygiene.

1. **General:** The Supervisory CIH will be administratively responsible for the Consultant’s contract including:
   a. Interpreting compliance with the technical specifications and existing Federal, State, and local / municipal regulations;
   b. Performing a supervisory role over on-site IH technicians; and
   c. Directing the testing and monitoring work performed under the Contract.

2. **Experience and Training:** The Supervisory CIH shall have demonstrated training and at least five (5) years’ experience in the areas of hazardous materials surveys and abatement monitoring.

B. **On-site Professional Industrial Hygienist (IH):** Provide three (3) full-time IH technician employees who are experienced in on-site supervision of hazard abatement projects.

1. **General:** The on-site IH technician shall be technically responsible for conducting testing and monitoring work of the contract including:
   a. Conducting building materials surveys;
   b. Monitoring air quality at hazard abatement sites; and
   c. Documenting Hazardous Materials and site conditions.

2. This person is the Consultant’s on-site representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to hazard abatement.

3. The individual shall be supervised by the Supervisory CIH (see above).

4. **Education:** IH Technicians shall have a four (4) year degree from an accredited college or university in the field of industrial hygiene, engineering, a physical or a natural science (e.g., geology, chemistry, physics, biology) with a minimum of twelve (12) semester hours of chemistry.
5. **Experience and Training:** The IH Technician shall have:

   a. Certificate coursework in industrial hygiene surveying, testing and monitoring procedures applicable to the work, including
      
      i) Completion of NIOSH Course #582, “Sampling and Evaluating Airborne Asbestos Dust,” or equivalent, and
      
      ii) Successful participation in NIOSH’s Proficiency Analytical Testing (PAT) Program for asbestos analysis, or equivalent AIHA Asbestos Analyst Registry (AAR); or

   b. Minimally one (1) year of experience in asbestos surveys and asbestos abatement monitoring projects.

C. **Project Staffing Continuity:** To maintain continuity, the Consultant shall assign to each project one or more individuals to monitor the project from start to finish.

   1. Consultant may propose a substitution of staff assignment to the University’s representatives.

   2. In such cases, the substitute shall meet with the existing assignee to discuss the project, scope of work, decisions made and pending regarding the project, and existing or anticipated problems.

   3. Minutes of this staff substitution meeting shall be presented to the University’s Project Manager and included in project close out documentation.

1.9 **SUBCONTRACTORS FOR PORTIONS OF WORK:**

A. The Consultant may engage a Subcontractor, except where prohibited elsewhere, to assist in fulfilling obligations in the Contract Documents provided:

   1. Consultant assumes all responsibility and liability for acts of error and omission by the Subcontractor, their agents, and employees;

   2. Employees of the subcontractor possess the same minimum qualifications required of the Consultant’s employees;

   3. Engagement of a subcontractor will not change the cost of the contract;

   4. Consideration of Minority Businesses are included in the selection process; and

   5. University has no objections to the proposed subcontractor (e.g., potential conflicts of interest).
B. The Consultant shall be allowed to subcontract the services of a Supervisory CIH ONLY IF:

1. Consultant has explained to the University's satisfaction why such person cannot be employed directly by the Consultant;

2. All conditions previously stated above for Sub consultants uses are met; and

3. Consultant can assure the University that the person(s) functioning as Supervisory CIH will:
   a. Devote at least 20 percent of their time to the University’s project(s), and
   b. Be readily available to perform all duties required by the contract Documents within a minimum of 24 hours of request.

C. The Consultant shall bind every Subcontractor and will verify that every Subcontractor agrees to be bound by the terms of these Contract Documents, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the University.

D. The Consultant shall agree to include the following provisions in all subcontracts and supply contracts applicable to the monitoring work.

1. The Subcontractor shall agree to submit to the Consultant applications for payment in such reasonable time as to enable the Consultant to apply for payment under the terms of these Contract Documents.

2. The Subcontractor shall agree to make all claims for extras, for extension of time, and for damages for delays or otherwise, to the Consultant in the manner provided for under the terms of these Contract Documents.

3. The Subcontractor shall agree, upon completion of his work, to promptly pay all labor, material suppliers, vendors, subcontractors and others, to permit simultaneous final payment by the Consultant.

E. The Consultant shall agree to be bound to the Subcontractor by all the obligations that the University assumes to the Consultant under these Contract Documents.

F. The Consultant shall agree that no claims for services or materials furnished by the Consultant to the Subcontractor shall be valid unless written notice thereof is given by the Consultant to the Subcontractor during the first ten (10) days of the calendar month following that in which the claim originated.

G. The Consultant and the Subcontractor shall agree that nothing in these Contract Documents shall create any obligation on the part of the University to pay, or to see to the payment of any sums, to any Subcontractor.
1.10 COORDINATION MEETINGS

Attend project coordination meetings that may be conducted by the University for all parties involved. Project coordination meetings are intended to coordinate the work of all contractors performing work on the site, and are in addition to specific meetings held for other purposes, such as regular progress meetings.

1.11 RECORD KEEPING:

C. Daily Log: Maintain a Daily Log (at the work site) as a sequential, hand-written record carefully prepared daily that documents, but is not limited to, the following items:

1. Meetings; purpose, attendees, brief discussion;

2. Special or unusual events, i.e. Barrier breeching, equipment failures, accidents;

3. Documentation of Consultant’s completion of the following:
   a. Inspection of work area preparation prior to start of removal and daily thereafter;
   b. Inspections prior to spray-back, lock-back, encapsulation, enclosure or any other operation that will conceal the condition of ACM or the substrate from which such materials have been removed.
   c. Final inspection/final air test analysis.

4. Documentation of Abatement Contractor’s completion of the following:
   b. Removal of waste materials from work area
   c. Decontamination of equipment (list items)

B. Air Monitoring Results: Maintain area air monitoring results on site, including PCM counting sheets for samples read on site.

C. Other records: Maintain other documentation at the work site that is accessible to the DUR, including:

5. Consultant’s Inspector License(s).

6. Consultant’s annual certification of respirator fit test.

7. Accident reports.
1.12 SPECIAL REPORTS:

A. **General:** Except as otherwise indicated, submit special reports directly to the University within one day of occurrence requiring special report, with one copy to University’s Project Manager and others affected by occurrence.

B. **Reporting Unusual Events:** When an event of unusual and significant nature occurs at site (examples: failure of pressure differential system, rupture of temporary enclosures), prepare and submit report. List chain of events, persons participating, response by Consultant’s and Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise University in advance at earliest possible date.

C. **Reporting Accidents:** Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury, or where work was stopped for over four hours during a scheduled shift.

D. **Report Discovered Conditions:** When an unusual condition of the building is discovered during the work (e.g. leaks, termites, corrosion) prepare and submit a special report indicating condition discovered.

1.83 SUBMITTALS

A. **Before the Start of Work:** Submit the following to the DUR for review.

1. Plan of Action.

2. Contingency Plans.


4. Notifications: copy of notification sent to other entities at the work site, and to emergency service agencies.

B. **Submit daily:** Provide DUR with copy of daily log by 5:00 p.m. the following work day unless another schedule is agreed to in writing by the DUR. Daily log is to include a detailed description of work performed, tests performed, samples collected, and results of analyses. Reports with insufficient information shall be returned to the Consultant for completion.

C. **Project Close-out:** Submit two (2) copies for information purposes of final report of survey, monitoring or inspection.
SECTION 01093 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic contract definitions are included in the Conditions of the Contract.

1. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.

2. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the University, requested by the University, and similar phrases.

3. "Approved": The term "approved," when used in conjunction with the University Project Manager's action on the Contractor's submittals, applications, and requests, is limited to the University's duties and responsibilities as stated in the Conditions of the Contract.

4. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

5. "Furnish": The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

6. "Install": The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

7. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

8. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection,
application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

a. The term "experienced," when used with the term "installer," means having a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.

b. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.

c. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

1) This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

9. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is described by the University Project Manager and shown on the Drawings, if available.

10. "Testing Agencies" or "Testing Laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, or to report on and, if required, to interpret results of those inspections or tests.

11. "Owner" is the University system of Maryland, Baltimore Region. The terms "Owner" and "University" may be used interchangeably in the Contract Documents.

12. "University Project Manager" or "Designated University Representative (DUR)": This is the entity described as the "Architect" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." All references to Architect or Engineer in the Contract Documents in all cases refer to the University Project Manager. The University Project Manager will represent the University during construction and until final payment is due.
13. "Project Administrator": This is the entity described as the "Project Representative" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." The Project Administrator is a full time representative of the University at the job site with authority to stop the work upon written or verbal order if requirements of the Contract Documents are not met, or if in the sole judgment of the Project Administrator, University Project Manager, or University, the interests of the University, safety of any person or the University's property are jeopardized by the work.

14. “Stop Work Order”: is a written order to cease lead-paint removal, encapsulation or enclosure activities. The Contractor must maintain work area enclosure, pressure differential isolation and ventilation of the work area, and decontamination units during the period that a Stop Work Order is in effect.

15. "General Superintendent": This is the Contractor's Representative at the work site. This person must be a Competent Person as defined by OSHA in 29 CFR 1926.

B. Definitions Relative to Lead-Based Paint Abatement:

1. “Accreditation”: A formal recognition that an organization (e.g. laboratory) is competent to carry out specific tasks or type of tests.

2. “Accredited Laboratory”: A laboratory that has been evaluated and given approval to perform a specified measurement or task (such as the National Lead Laboratory Accreditation Program), usually for a specific property or analyze for a specified period of time.

3. “Accredited Training Provider”: Means a training provider that meets the standards established by EPA to train risk assessors, inspectors, supervisors, and workers.

4. “Action Level”: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter ($\mu g/m^3$) of air averaged over an 8-hour period in an occupational / industrial environment. In a domicile or other environment where 24 hour exposure is possible, the action level is: exposure to an airborne time weighted average (24 hours) of concentration of lead of 8 micrograms per cubic meter of air.

5. “Adhesion”: The ability of dry paint or other coating to attach to or remain fixed on a surface without blistering, flaking, cracking, or being removed by tape.

6. “Area Monitoring”: Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations which may reach the breathing zone of personnel potentially exposed to lead.

7. “Blank”: A non-exposed sample of the medium used for testing, such as a wipe or
filter, which is analyzed like other samples to determine whether (1) samples are contaminated with lead before samples are collected (e.g., at the factory, or at the testing site), (2) the samples are contaminated after sample collection (e.g., during transportation to the laboratory or in the laboratory).

8. “Breathing Zone”: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches around the nose and mouth of the face.

9. “Certified Industrial Hygienist (CIH)”: An industrial hygienist certified by the American Board of Industrial Hygiene.


11. “Change Areas and Hand washing Facilities”: Change Areas are equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevent cross-contamination. If a nearby restroom is not available for use by the contractor for hand washing, the Contractor shall provide hand washing facilities near the Change Area.

12. “Common Area: A room or area that is accessible to all tenants in a Project (e.g., hallway, boiler room). Generally, any area that is not kept locked.

13. “Competent Person”: An agent of the Contractor who is a Competent Person as defined by OSHA in 29 CFR 1926.62. This person must be capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization by the Contractor to take prompt corrective measures to eliminate them.


15. “Detection Limit”: The minimum of a component that a method can reliably measure.

16. “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.

17. “Exposure Monitoring”: The personal air monitoring of an employee's breathing zone to determine the amount of contaminant (e.g. lead) to which he/she is exposed.

18. “Federal Register”: A document published daily by the Federal government that contains either proposed or final regulations.

19. “Hazardous Waste”: As defined in RCRA the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:
a. Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

b. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

c. As defined in the regulations, a solid waste is hazardous if it meets one of four conditions:

   i). Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24).

   ii). Has been listed as hazardous (40 CFR Section 261.31 through 261.33).

   iii). Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste)?

   iv). Is not excluded from regulation as a hazardous waste.

20. “HEPA” - High Efficiency Particulate Air: A filter capable of filtering out particles of 0.3 microns or greater from a body of air at 99.97% efficiency or greater.

21. “High Phosphate Detergent”: Detergent which contains at least 5% tri-sodium phosphate (TSP).

22. “Landfill”: A disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, or an injection well.

23. “Lead”: Metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.

24. “Lead-Based Paint (LBP)”: Any paint, varnish, shellac, or other coating that contains lead greater than 0.7 mg/cm² as measured by x-ray fluorescence (XRF) detector or laboratory analysis, or equal to or greater than 0.5 percent by weight (5,000 µg/g, 5,000 ppm, or 5,000 mg/kg) by laboratory analysis.

25. “Lead-Containing Paint (LCP)”: Protective or decorative coating which contains lead.

26. “Lead Control Area”: An enclosed area or structure with temporary containment constructed to prevent the spread of lead dust, paint chips, or debris of lead-based paint removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.
27. “Lead Permissible Exposure Limit (PEL)”: Fifty micrograms per cubic meter (50 \(\mu g/m^3\)) of air as an 8-hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula:

\[
\text{PEL (micrograms/cubic meter of air)} = \frac{400}{\text{No. hrs worked per day}}
\]

28. “Mg” - Micrograms: The prefix "micro-" means "1/1,000,000 of" (one millionth of). A microgram is 1/1,000,000 of a gram and 1/1,000 of a milligram. A microgram is equal to about 35/1,000,000,000 (thirty-five billionths) of an ounce. 28,400,000 mgs are equal to 1 ounce.

29. “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.

30. “Personal Monitoring”: Sampling of the lead dust concentrations within the breathing zone of an employee.

31. “Personal Samples” (for sampling lead dust): Air samples collected from within the breathing zone of a worker, but outside the respirator. The samples are collected with a personal sampling pump, pulling 1 to 4 liters/minute of air.

32. “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."

33. “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.

34. “Respirator”: A device designed to protect the wearer from the inhalation of harmful atmospheres.

35. “Solid Waste”: As defined in RCRA the term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under the Clean Water Act, or special nuclear or byproduct material as defined by the Atomic Energy Act of 1954.

36. “TCLP” (Toxicity Characteristic Leaching Procedure): A test, called the extraction procedure that is designed to identify wastes likely to leach hazardous concentrations of particular toxic constituents into the ground water as a result of
improper management. It is a characteristic of hazardous waste.

37. “Time Weighted Average” (TWA): The average concentration of a contaminant in air during a specific time period.


39. “ULPA” - Ultra Low Particulate Air: Means a filter capable of filtering out particles of 0.13 microns or greater from a body of air at 99.9995% efficiency or greater.

40. “Wet Cleaning” (Wet Detergent Wash): The process of eliminating lead dust contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with a solution of water and trisodium phosphate (TSP) or appropriate substitute and afterwards thoroughly decontaminated or disposed of as lead contaminated waste.

41. “Work Area”: The area where lead based paint abatement or related work is performed which is defined and/or isolated to prevent the spread of lead dust, or debris, and entry by unauthorized personnel.

42. “Work Practice”: A procedure followed by workers that is intended to minimize exposure to the worker and the environment.

C. Definitions Relative to Asbestos Abatement:

1. “AALA”: American Association for Laboratory Accreditation. Also known as A2LA.

2. “Abatement”: A measure designed to permanently eliminate asbestos-containing material hazards according to standards established by the environmental Protection Agency (EPA) Administrator, pursuant to Title IV of the Toxic Substances Control Act (TSCA). Abatement strategies include the removal of asbestos-containing and material, its enclosure, its encapsulation with a product shown to meet established of recognized standards pursuant to Title IV of TSCA, replacement of building components coated by asbestos-containing materials, removal of asbestos contaminated dust, and removal of asbestos contaminated soil as well as preparation, cleanup, disposal, post-abatement clearance testing, recordkeeping, and, if applicable, monitoring.

3. “Accredited” or “Accreditation” (when referring to a person or laboratory): A person or laboratory accredited in accordance with section 206 of Title II of the Toxic Substances Control Act (TSCA).

4. “Adequately Wet”: Means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from the asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.

5. “Aerosol”: A system consisting of particles, solid or liquid, suspended in air.
6. “Air Cell”: Insulation normally used on pipes and duct work that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.

7. “Air Monitoring”: The process of measuring the fiber content of a specific volume of air.

8. “Amended Water”: Water to which a surfactant has been added to decrease the surface tension to 35 or less dynes.

9. “Area Air Samples”: Air samples collected from an area in which abatement activity is being conducted. Samples are typically collected with high volume sampling pumps pulling a measured volume of air per unit of time. Results are presented as fibers per cubic centimeter (f/cc) of air or, in the case of TEM, analysis in structures per square millimeter (S/mm²) of filter surface.

10. “Asbestos”: The asbestiform varieties of chrysotile (serpentine), amosite (cummingtonite-grunerite), crocidolite (riebeckite), tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered. For purposes of the contract documents, materials described in the contract documents as asbestos are to be considered as asbestos.

11. “Asbestos-Containing Material (ACM)”: Any material containing more than 1% asbestos as determined using the methods specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy.

12. “Asbestos-Containing Building Material (ACBM)”: Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.

13. “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.

14. “Asbestos debris”: Pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.

15. “Authorized Visitor”: The University, the DUR, the University’s IH Consultant, emergency personnel or a representative of any federal, state and local regulatory or other agency having authority over the project.

16. “Barrier”: Any surface that seals off the work area to inhibit the movement of fibers.

17. “Breathing Zone”: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.
18. “Category I Nonfriable Asbestos-Containing Material (ACM)”: EPA-NESHAPS definition meaning asbestos-containing packing, gaskets, resilient floor covering, asphalt roofing products, pliable sealants, and mastics in good condition containing more than 1 percent asbestos.

19. “Category II Nonfriable Asbestos-Containing Material (ACM)”: EPA-NESHAPS definition meaning any non-friable material, excluding Category Nonfriable ACM defined above, containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

20. “Ceiling Concentration”: The concentration of an airborne substance that shall not be exceeded.

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

22. “Class I Asbestos Work”: OSHA definition meaning activities involving the removal of TSI and surfacing ACM and PACM.

23. “Class II Asbestos Work”: OSHA definition meaning activities involving the removal of ACM which is not TSI or surfacing material including, but not limited to, the removal of ACM wallboard, floor tile, sheeting, roofing and siding shingles, and construction mastics.

24. “Class III Asbestos Work”: OSHA definition meaning activities involving the removal of ACM, including TSI and surfacing ACM and PACM, may be disturbed. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches (1.52 m) in length and width.

25. “Class IV Asbestos Work”: OSHA definition meaning maintenance and custodial activities during which employees contact, but do not disturb ACM and PACM and activities to clean up dust, waste, and debris resulting from Class I, II, III activities. Class IV asbestos work shall not be interpreted to include clean up within regulated areas for this asbestos abatement project.

26. “Clean Room”: An uncontaminated room having facilities for the storage of employees’ street clothing and uncontaminated materials and equipment.

27. “Competent Person”: Individual (s) who meet (s) the requirements of OSHA as a “competent person” for the specific activity involved in the work. The competent person must meet the requirements 29 CFR 1926.32 (f) and 29 CFR 1926.1101.

28. “Critical Barrier”: One or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
29. “Decontamination Area”: Means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

30. “Demolition”: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

31. “Disposal Bag”: A properly labeled 6 mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site.

32. “Encapsulate”: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.
   a. “Bridging encapsulate”: an encapsulate that forms a discrete layer on the surface of an in situ asbestos matrix.
   b. “Penetrating encapsulate”: an encapsulant that is absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.


34. “Enclosure”: The construction of an air-tight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

35. “Engineering Controls”: Designed measures which are implemented at the work site to contain, control, and/or otherwise reduce exposure to airborne asbestos fibers.

36. “Equipment Room (Change Room)”: Means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

37. “Excursion Limit”: The airborne fiber concentration, expressed as a time-weighted average over a thirty (30) minute sampling period, to which the employer shall ensure no employee is exposed. For asbestos, the excursion limit is 1.0 fibers per cubic centimeter (f/cc) of air.

38. “Filter”: A media component used in respirators to remove solid or liquid particles from the inspired air.

39. “Friable Asbestos Material”: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
40. “Glovebag”: A sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

41. “HEPA Filter”: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.

42. “HEPA Filter Vacuum Collection Equipment” (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 micrometers (μm) or larger.

43. “High-efficiency particulate air filter”: (HEPA) refers to a filtering system capable of trapping and retaining 99.97 percent of all monodispersed particles 0.3 μm in diameter or larger.

44. “Homogeneous Area”: Means an area of surfacing material or thermal system insulation that is uniform in color and texture.

45. “Industrial Hygienist”: A Professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.

46. “Intact”: ACM that has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bond with its matrix.

47. “Leak-tight”: Solids or liquids cannot escape or spill out. It also means dust-tight.

48. “Negative Initial Exposure Assessment”: Demonstration by the competent person, which complies with the criteria in paragraph (f) (2) (iii) of 29 CFR 1926.1001, that employee exposure during an operation is expected to be consistently below the PELs.

49. “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.

50. “Negative Pressure Ventilation System”: A pressure differential and ventilation system.

51. “Nonfriable Material”: Any material that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure and has not been rendered friable.

52. “PACM”: Presumed asbestos containing material as defined by the OSHA regulation 29 CFR Part 1926.1101
53. “Permissible Exposure Limit (PEL)”: The airborne concentration of a substance above which OSHA requires an employer to implement engineering controls to ensure that no employee is exposed, without regard to the use of respirators, expressed as a time-weighted average (TWA) over an eight (8) hour work day. For asbestos, the PEL is 0.1 fibers per cubic centimeter (f/cc) of air.

54. “Personal Monitoring”: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

55. “Pressure Differential and Ventilation System”: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the Work Area at a lower pressure than any adjacent area, and which cleans recirculated air or generates a constant air flow from adjacent areas into the Work Area.

56. “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.

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

58. “Regulated Asbestos-Containing Material (RACM)”: An EPA NESHAP’s definition for (a) Friable asbestos material, (b) Category I nonfriable ACM that has become, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

59. “Repair”: Returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.

60. “Respirator”: A device designed to protect the wearer from the inhalation of harmful atmospheres.

61. “Surfacing Material”: Material that is sprayed, trowled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

62. “Surfactant”: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

63. “Thermal System Insulation (TSI)”: Insulation applied to pipes, fitting, boilers, breeching, tanks, ducts, or other components to prevent heat loss or gain.
64. “Time Weighted Average (TWA)”: The average concentration of a contaminant in air during a specific time period.

65. “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.

66. “Waste Shipment Record”: The shipping document, required to be organized and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing wasted material and which complies with EOA’s NESHAP requirements.

67. “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 amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

68. “Work Area”: The area where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.

69. “Working Day”: Monday through Friday and includes holidays that fall on any of the days Monday through Friday as indicated in the notification requirements.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. **Specification Format**: These Specifications are organized into Divisions and Sections based on CSRF’s 16-Division format and Master Format’s numbering system.

B. **Specification Content**: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. **Abbreviated Language**: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

2. **Streamlined Language**: The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

1. Referenced industry standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.

2. Unreferenced industry standards are not directly applicable to the work, except as a general requirement of whether the work complies with recognized construction industry standards.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer to the University’s Representative before proceeding for a decision on requirements that are different but apparently equal, and where it is uncertain which requirement is the most stringent.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum acceptable. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the University Project Manager for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

2. Although copies of standards needed for enforcement of requirements may be part of required submittals, the University’s Representative reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

E. Abbreviations and Names: Trade association names and titles of general standards and federal government agency names and titles of government standards and specifications are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, government authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Co.’s
"Encyclopedia of Associations," available in most libraries.

F. **Trade Union Jurisdictions:** The Contractor shall maintain, and require subcontractors to maintain, complete current information on jurisdictional matters, regulations and pending actions, as applicable to construction activities. The manner in which Contract Documents have been organized and subdivided is not intended to be indicative of trade union or jurisdictional agreements.

1. Discuss new developments at project meetings at the earliest feasible dates. Record relevant information and actions agreed upon.
2. Assign and subcontract construction activities, and employ tradesmen and laborers in a manner that will not unduly risk jurisdictional disputes that could result in conflicts, delays, claims and losses.

1.5 **SUBMITTALS**

A. **Permits, Licenses and Certificates:** For the University’s records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and emulations bearing upon performance of the work.

B. **Patented Devices, Materials and Processes:** The Contractor agrees to indemnify, protect and save harmless the State of Maryland, the University, its officers, agents, and employees with respect to any claims, actions, judgments, and patent infringements arising out of the purchase or use of materials, supplies, equipment or services covered by this contract. Furthermore, the Contractor agrees to indemnify, protect and save harmless the State, the University, its officers, agents, and employees with respect to any claim, action, cost, or judgment arising from any dispute concerning the validity of any patent that in any way relates to the process required by the specifications. This indemnification obligation is not limited to the insurance obligations and performance bonds contained in this agreement.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01093
SECTION 01098 - CODES, REGULATIONS AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

A. This section sets forth governmental regulations which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the University and which either must be applied for and received, or which must be given to governmental agencies before start of work.

1. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations and standards.

2. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

1.3 CODES, REGULATIONS AND STANDARDS

A. General Applicability of Codes, Regulations and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable codes and regulations have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.

B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the University harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of the contractor, the contractor’s employees, or subcontractors.

C. Federal Requirements: which govern asbestos and lead-based paint abatement work or hauling and disposal of hazardous waste materials include but are not limited to the following:

1. OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
a. Asbestos
   Title 29, Part 1926, Section 1101 of the Code of Federal Regulations

b. Lead
   Title 29, Part 1926, Section 62 of the Code of Federal Regulations

c. Respiratory Protection
   Title 29, Part 1910, Section 134 of the Code of Federal Regulations

d. Personal Protective and Life Saving Equipment
   Title 29, Part 1926, Sections 95 - 107 of the Code of Federal Regulations

e. Access to Employee Exposure and Medical Records
   Title 29, Part 1926, Section 33 of the Code of Federal Regulations

f. Hazard Communication
   Title 29, Part 1926, Section 59 of the Code of Federal Regulations

g. Accident Prevention Signs and Tags
   Title 29, Part 1926, Section 200 of the Code of Federal Regulations

h. Permit Required Confined Space
   Title 29, Part 1910, Section 146 of the Code of Federal Regulations

i. General Safety and Health Provisions
   Title 29, Part 1926, Sections 20 - 35 of the Code of Federal Regulations

2. **DOT:** U. S. Department of Transportation, including but not limited to:
   a. Hazardous Substances
      Title 49, Part 171 - 172 of the Code of Federal Regulations

   b. Asbestos Waste Management Guide
      Title 49, Part 173, Subpart J of the Code of Federal Regulations

   c. Hazardous Material Regulations
      Title 49, Parts 171-180 of the Code of Federal Regulations

3. **EPA:** U. S. Environmental Protection Agency (EPA), including but not limited to:
   a. Lead-Based Paint Poisoning Prevention in Certain Residential Structures
      Title 40 Part 745 of the Code of Federal Regulations

   b. Asbestos Abatement Projects; Worker Protection Rule
      Title 40 Part 763, Subpart G of the Code of Federal Regulations

   c. Asbestos Hazard Emergency Response Act (AHERA) Regulation
      Title 40, Part 763, Subpart E of the Code of Federal Regulations
d. EPA Model Accreditation Plan - Asbestos Containing Materials Final Rule & Notice
   Title 40, Part 763, Subpart E, Appendix C of the Code of Federal Regulations

   Title 40, Part 61, Subpart A, and Subpart M (Revised Subpart B) of the Code of Federal Regulations

f. Training Requirements of (AHERA) Regulation
   Title 40, part 763, Su-part E, Appendix C of the Code of Federal Regulations

g. Public Law 101-500 (Safe Transportation of Food Act requires the use of dedicated vehicles to haul asbestos and other dangerous waste preventing backhauling).

4. **HUD:** Department of Housing and Urban Development
   
a. Lead-Based Paint Poisoning Prevention in Certain Residential Structures
      Title 24 Part 35 of the Code of Federal Regulations

D. **State Requirements:** which govern asbestos and lead-based paint abatement work or hauling and disposal of hazardous waste materials include but are not limited to the following:

1. **MARYLAND - MDE:** Maryland Department of the Environment

   **COMAR 26.02.07** - Procedures for Abating Lead Containing Substances from Buildings

   **COMAR 26.16** - Lead

   **COMAR 26.11.21** - Control of Asbestos

   **COMAR 26.11.23** - Asbestos Accreditation of Individuals and Approval of Training

2. **MARYLAND - MDOL:** Maryland Department of Labor, Licensing and Regulation


E. **Local Requirements:** Abide by all local requirements which govern asbestos and lead-based paint abatement work or hauling and disposal of hazardous waste materials.
F. **Building Codes**: Comply with applicable provision of Maryland and/or local building codes that govern any part of the work.

G. **Model Codes**: In the absence of an applicable adopted state or local building code which governs work involved in the abatement project, comply with the applicable provisions of the BOCA National Codes/1993 published by International Conference for Building Officials or the SBCCI Standard Codes published by Southern Building Code Congress International.

1.4 NOTICES:

A. **U.S. ENVIRONMENTAL PROTECTION AGENCY**

1. Postmark or Deliver Written Notification as required by USEPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAP Contact at least 10 working days prior to beginning any work on asbestos-containing materials (ACM). Send notification to the following address:

   REGION 3  
   Asbestos NESHAP Contact  
   Air Management Division  
   USEPA  
   841 Chestnut Street  
   Philadelphia, PA 19107  
   (215) 597-6550

2. There is a copy of the NESHAP form at the end of this section.

B. **STATE AND LOCAL AGENCIES**:

1. Send written notification as required by Maryland and local regulations prior to beginning any work on ACM or Lead-Based Paint.

1.5 PERMITS:

A. **Permit**: All hazardous waste is to be transported by an entity maintaining a current "Industrial waste hauler permit," as required for transporting of waste to a disposal site.

B. **Contractor is responsible** for obtaining any demolition, building, renovation or other permits, and for paying application fees, if any, where required by Maryland or Local jurisdictions.

1.6 LICENSES:

A. **Licenses**: Maintain current licenses as required by applicable Maryland or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the Work of this Contract.
1.7 POSTING AND FILING OF REGULATIONS

A. Posting and Filing of Regulations: Post all notices required by applicable federal, Maryland, and local regulations. Maintain two (2) copies of applicable federal, Maryland, and local regulations and standards. Maintain one copy of each at job site. Keep on file in Contractor's office one copy of each.

1.8 SUBMITTALS:

A. Before Start of Work: Submit the following to the DUR for review. No work shall begin until these submittals are returned with DUR’s indication that the submittal is returned for unrestricted use or final-but-restricted use.

1. Permits, Licenses, and Certificates: For the University's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:

   a. State and Local Regulations: Submit copies of codes and regulations applicable to the work.

2. Notices: Submit notices required by federal, Maryland and local regulations together with proof of timely transmittal to agency requiring the notice.

3. Permits: Submit copies of current valid permits required by Maryland and local regulations.

4. Licenses: Submit copies of all Maryland and local licenses and permits necessary to carry out the Work of this Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION – 01098 (Form Attached)
**NOTIFICATION OF DEMOLITION AND RENOVATION**

<table>
<thead>
<tr>
<th>OPERATOR PROJECT #</th>
<th>POSTMARK</th>
<th>DATE RECEIVED</th>
<th>NOTIFICATION #</th>
</tr>
</thead>
</table>

I. **TYPE OF NOTIFICATION** (O-Original  R-Revised  C-Canceled):

II. **FACILITY INFORMATION** (identify owner, removal contractor, and other operator)

- **OWNER NAME:**
  - ADDRESS:
  - CITY: STATE: ZIP:
  - CONTACT: TEL:

- **REMOVAL CONTRACTOR:**
  - ADDRESS:
  - CITY: STATE: ZIP:
  - CONTACT: TEL:

- **OTHER OPERATOR:**
  - ADDRESS:
  - CITY: STATE: ZIP:
  - CONTACT: TEL:

III. **TYPE OF OPERATION** (D-Demo  O-Ordered Demo  R-Renovation  E-Emergency Renovation):

IV. **IS ASBESTOS PRESENT?** (Yes/No)

V. **FACILITY DESCRIPTION** (Include building name, number and floor or room number)

- **BLDG NAME:**
  - ADDRESS:
  - CITY: STATE: ZIP:
  - SITE LOCATION:

  **BUILDING SIZE:**
  - # OF FLOORS:
  - AGE IN YEARS:

  **PRESENT USE:**
  - PRIOR USE:

VI. **PROCEDURE, INCLUDING ANALYTICAL METHOD, IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:**

VII. **APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING:**

- 1. **REGULATED ACM TO BE REMOVED**
  - **RACM TO BE REMOVED**
  - **NONFRIABLE ASBESTOS MATERIAL NOT TO BE REMOVED**

- **INDICATE UNIT OF MEASUREMENT BELOW**

- **UNIT**

<table>
<thead>
<tr>
<th>PIPE</th>
<th>SURFACE AREA</th>
<th>VOL RACM OFF FACILITY COMPONENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln Ft:</td>
<td>Sq Ft:</td>
<td>Cu Ft:</td>
</tr>
<tr>
<td>Ln m:</td>
<td>Sq m:</td>
<td>Cu m:</td>
</tr>
</tbody>
</table>

VIII. **SCHEDULED DATES ASBESTOS REMOVAL** (MM/DD/YY) **Start:** Complete:

IX. **SCHEDULED DATES DEMO/RENOVATION** (MM/DD/YY) **Start:** Complete:

continued on page two
X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION AND RENOVATION SITE:

XII. WASTE TRANSPORTER #1

ADDRESS:

CITY: STATE: ZIP:

CONTACT: TEL:

WASTE TRANSPORTER #2

ADDRESS:

CITY: STATE: ZIP:

CONTACT: TEL:

XIII. WASTE DISPOSAL SITE

NAME:

LOCATION:

CITY: STATE: ZIP:

TELEPHONE:

XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

NAME:

AUTHORITY:

CITY: STATE: ZIP:

DATE OF ORDER (MM/DD/YY) DATE ORDERED TO BEGIN (MM/DD/YY)

XV. FOR EMERGENCY RENOVATIONS

Date and Hour of Emergency (MM/DD/YY):

Description of the Sudden, Unexpected Event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVI. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE DEMOLITION OR RENOVATION AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS. (Required 1 year after promulgation)

(Signature of Owner/Operator) (Date)

XVIII. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

(Signature of Owner/Operator) (Date)
SECTION 01301 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

1. Review of Contractor’s construction schedule.
2. Review of Contractor’s Submittal schedule.
3. Daily monitoring reports.
4. Miscellaneous submittals

B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Permits
2. Applications for payment
3. Performance and payment bonds
4. Insurance certificates (e.g., Errors and Omissions)
5. List of Subcontractors (e.g., outside Testing Laboratories)

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of industrial hygiene monitoring services and hazardous materials abatement activities. Transmit each submittal sufficiently in advance of performance of related activities to avoid delay.

1. Coordinate each submittal with activities that follow sequentially.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

   a. The DUR reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

B. Processing: To avoid the need to delay the Project as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.
1. Allow additional time if processing must be delayed to permit coordination with subsequent submittals.

2. The DUR will promptly advise the Consultant when a submittal being processed must be delayed for coordination.

3. If an intermediate submittal is necessary, process the same as the initial submittal.

4. No extension of Contract Time will be authorized because of failure to transmit submittals to the DUR sufficiently in advance of the Work to permit processing.

C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Include the following information on the label for processing and recording action taken.
   a. Project name.
   b. Date.
   c. Name and address of the DUR.
   d. Name and address of the Consultant.
   e. Name and address of the Contractor.
   f. Name and address of the subcontractor.
   g. Number and title of appropriate Specification Section.
   h. Drawing number and detail references, as appropriate.

D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Consultant to the DUR using a transmittal form. The DUR will not accept submittals received from sources other than the Consultant.

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Consultant's certification that information complies with Contract Document requirements.

E. Transmittal Form: Use AIA Document G810, or equivalent form.

1.4 SUBMITTAL SCHEDULE

A. Listing: At the end of this Section is a listing of the principal submittals required for the Work. This listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement. The listing is included only for the convenience of users of the Contract Documents.
1.5 HAZARDOUS MATERIAL-RELATED SUBMITTALS

A. Submission of the following shall be accomplished by the Consultant before start of any abatement monitoring work.

1. Licensure: Consultant shall submit evidence of licensure to perform asbestos and/or lead abatement monitoring and inspection work in the State of Maryland pursuant to Maryland regulations.

2. Training: Consultant shall submit information pertaining to the training courses taken by employees which indicates adequacy to accomplish work specified herein. This review requirement in no way relieves the Consultant from responsibility to comply with training requirements as indicated under existing regulations.

3. General Qualifications: Consultant shall submit the documentation required for the technical offer per Section 00300.

4. Submit evidence of full compliance with medical surveillance and respiratory protection provisions of existing regulations including:
   a. Respiratory protection program, and
   b. Medical surveillance program.

5. Consultant shall submit the following statement notarized and signed (by a principle of the company) verifying accuracy and truth of the following information:
   a. List of any contractual penalties which the Consultant has incurred for breach or non-compliance with Contract Specifications on previous projects, such as overruns of completion time leading to liquidated damages.
   b. violations related to asbestos or lead abatement monitoring, inspections or surveys including:
      i. Name and location of the project,
      ii. Date(s) of violation(s), and
      iii. Allegation resolution.
   c. Description of all legal proceedings, lawsuits, or claims which have been filed or levied against the Consultant or any of his past or present employees for asbestos- or lead-related activities.

1.6 MISCELLANEOUS SUBMITTALS

A. Material Safety Data Sheets: Process material safety data sheets as “product data.”

B. Closeout Submittals: Refer to section "Project Closeout" and to individual sections of these specifications for specific submittal requirements of project closeout information.

C. Record Documents: Furnish set of original documents as maintained on the project site.
1.7 UNIVERSITY’S IH CONSULTANT’S ACTION

A. Except for submittals for the record or information, where action and return is required, the Designated University Representative (DUR) will review each submittal and, where necessary, mark to indicate action taken, and return promptly.

B. Compliance with specified characteristics is the Consultant’s responsibility.

1.8 OWNERSHIP OF SUBMITTALS, REPORTS, AND OTHER DOCUMENTS

A. All submittals given to the DUR by the Consultant shall become the property of the University.

1. This includes all drawings, laboratory analysis reports, daily logs, and other documents required by the Contract Documents and shall become the property of the University.

2. Once submitted, copies of these documents retained by the Consultant may not be changed without written authorization from the University or through University acceptance of a written amendment.

3. The Consultant shall not release information through written or oral media concerning the work of this Contract without written authorization from the University, except when requested for information by agents of the State of Maryland (e.g., MD Dept. of the Environment, MOSH, etc.) or delegated representatives of the using agency in which the project was conducted.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION - 01301 (Attached Checklist)
SUBMITTAL CHECKLIST

The submittals required from the Consultant include, but are not limited to, the following:

01013  **Summary of Work – IH Monitoring Services**
Before Start of Work:
  - Plan of Action
  - Alternative Procedure (optional)
Upon Completion of Work:
  - Monitoring Final Report
  - Site Assessment Report

01043  **Project Coordination – IH Monitoring Services**
Before Start of Work:
  - Contingency Plans
  - Telephone, Pager and Fax
  - Accreditation of Inspectors and Monitors
  - Staff Names
During Work:
  - Daily Logs
  - Event Reports
  - Accident Reports
  - Discovered Condition Reports

01093  **Reference Standards and Definitions**
Before Start of Work:
  - None
Periodically During Work:
  - None

01098  **Codes, Regulations and Standards**
Before Start of Work:
  - Licenses
After Work Start:
  - Same when personnel changes are made

01301  **Submittals**
Before Start of Work:
  - Certificates of Insurance
  - Licenses
  - Training Certificates
  - Medical/Respiratory Protection Programs
  - Qualifications
  - Notarization of Authenticity
  - Submittal Schedule
During Work:
  - Progress photographs and videos, where applicable
  - Record documents as required by DUR
01410  Test Laboratory Services – Asbestos Abatement
Before Work:
   NVLAP AIHA-accreditation
Periodically During Work
   Laboratory reports

01415  Test Laboratory Services – Asbestos Surveys
Before Work:
   NVLAP AIHA-accreditation
Periodically During Work
   Laboratory reports

01420  Test Laboratory Services – Lead-Based Paint
Before Work:
   NLLAP AIHA-accreditation
Periodically During Work
   Laboratory reports

01421  Work Area Clearance – Lead-Based Paint
Before Start of Work:
   None
Periodically During Work:
   Sampling Results
Upon Completion of Work:
   Final Monitoring Report

01560  Worker Protection – IH Monitoring Services
Before Start of Work:
   AHERA accreditation for each inspector
   State and local license for each inspector
   Certificate employee acknowledgement
   Report from medical examination for each on-site employee
   Notarized certifications
Periodically During Work:
   None

01562  Respiratory Protection
Before Start of Work
   Product data
   NIOSH certifications
   Type “C”
      System diagram
      Operating instructions
   Respiratory protection program
      Written manual
      Form at end of section
   Historic airborne fiber data
   Resume information, where applicable
Periodically During Work:
   None
01711 Project Decontamination
Before Start of Work:
   None
Periodically During Work:
   Certificate of visual inspection

01714 Work Area Clearance – Asbestos Abatement
Before Start of Work:
   None
Periodically During Work:
   Sampling Results
Upon Completion of Work:
   Final Monitoring Report
SECTION 01410 – TEST LABORATORY SERVICES – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

B. **Air Monitoring**: during work area clearance is described in Section 01714 Work Area Clearance – Asbestos Abatement.

1.2 DESCRIPTION OF THE WORK

A. **This Section** describes air monitoring carried out by the University’s IH Consultant to verify that the building beyond the Work Area and the outside environment remains uncontaminated. This section also sets forth airborne fiber levels both inside and outside the Work Area as action levels, and describes the action required by the Abatement Contractor if an action level is met or exceeded.

B. **This Section** should be employed only for monitoring a reduced pressurization, containment system.

   1. Less restrictive air monitoring protocols shall be proposed on a case by case basis by the IH Consultant on projects of a “small scale, short duration” nature or those performed using mini-enclosures and glove bags, as defined under 29 CFR 1926.1101.

C. **Personal air monitoring** required by either the Consultant’s employees or the Abatement Contractor’s employees for OSHA compliance is work of the Consultant or Contractor and is not covered in these Contract Documents.

1.3 AIR MONITORING:

A. **Work Area Isolation**: The purpose of the Consultant's air monitoring is to detect faults in the Work Area isolation such as:

   1. Contamination of the building outside of the Work Area with airborne asbestos fibers,
   2. Failure of filtration or rupture in the differential pressure system,
   3. Contamination of air outside the building envelop airborne asbestos fibers.
   4. Should any of the above occur, the Consultant shall contact the DUR and instruct the Abatement Contractor to immediately cease asbestos abatement activities until the fault is corrected. The Consultant shall not authorize the Abatement Contractor to recommence work until authorized by the DUR.
B. **Work Area Airborne Fiber Count:** The Consultant will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

C. **Work area clearance:** To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Consultant will sample and analyze air per Section 01714 Work Area Clearance – Asbestos Abatement.

D. **Monitoring Continuity:** The Consultant shall conduct air monitoring throughout the course of the abatement Project.

### 1.4 STOP ACTION LEVELS:

A. **Inside Work Area:** Verify that the Abatement Contractor maintains an average airborne count in the Work Area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts rise above this figure for any sample taken, direct the Contractor to revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8 hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify DUR. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by DUR.

<table>
<thead>
<tr>
<th>IMMEDIATE STOP ACTION LEVEL (f/cc)</th>
<th>MINIMUM RESPIRATOR REQ'D BY OSHA</th>
<th>MINIMUM PROTECTION FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>1.0</td>
<td>Half-Face</td>
<td>10</td>
</tr>
<tr>
<td>5.0</td>
<td>PAPR</td>
<td>50</td>
</tr>
<tr>
<td>10.0</td>
<td>Type C</td>
<td>100</td>
</tr>
</tbody>
</table>

1. If airborne fiber counts exceed Immediate Stop Level given above for type of respiratory protection in use for any period of time, direct the Abatement Contractor to cease all work except corrective action. Notify DUR. Do not authorize recommencing work until fiber counts fall below Stop Action Level given above for the type of respiratory protection in use. After the Contractor corrects the cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by DUR.

B. **Outside Work Area:** If any air sample taken outside of the Work Area’s negative pressure enclosure exceeds the Baseline Level in fibers per cubic centimeter (F/cc), as provided below, direct the Contractor to immediately and automatically stop all work except corrective action, determine the source of the high reading, and so notify the Contractor and DUR in writing.

1. If the high reading was the result of a failure of Work Area isolation measures, direct the Contractor to initiate the following actions:
   a. Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures
i. Isolate the affected area from the balance of the building;

ii. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).

b. Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.

c. Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for reoccupancy in accordance with Section 01714 Work Area Clearance – Asbestos Abatement.

d. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.

e. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to affected area.

f. After Certification of Visual Inspection in the Work Area, remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01714 Work Area Clearance – Asbestos Abatement.

2. If the high reading was the result of other causes, direct the Contractor to initiate corrective action as determined by the Consultant in consultation with the DUR.

C. Effect on Contract Sum: Abatement Contractor shall complete corrective work with no change in the Contract Sum if high airborne fiber counts were caused by Contractor's activities. The Contract Sum and schedule will be adjusted for additional work caused by high airborne fiber counts beyond the Contractor's control.

D. Fibers Counted: The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.

1. Large Fibers: "Airborne Fibers" referred to above include all fibers regardless of composition as counted by phase contrast microscopy (PCM), unless additional analysis by transmission electron microscopy demonstrates to the satisfaction of the Consultant that non-asbestos fibers are being counted. "Airborne Fibers" counted in samples analyzed by transmission electron microscopy shall be asbestos fibers, greater than 5 microns in length and greater that 0.25 microns in diameter. For purposes of stop action levels, subsequent to analysis by electron microscopy, the number of "Airborne Fibers" shall be determined by multiplying the number of fibers, regardless of composition, counted by PCM by a number equal to asbestos fibers counted divided by all fibers counted in the electron microscopy analysis.

2. Small Structures: "Airborne Fibers" referred to above include asbestos structures (fibers, bundles, clusters or matrices) of any diameter and any length greater than 0.5 microns.
1.5 ANALYTICAL METHODS:
A. The following methods shall be used by the Consultant in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

1. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 method. This analysis will be carried out at the job site.

2. Transmission Electron Microscopy (TEM) will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

1.6 SAMPLE VOLUMES:
A. General: The number and volume of air samples taken by the Consultant will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical method used.

1.7 SCHEDULE OF AIR SAMPLES:

A. Before Start of Work:

1. The Consultant shall secure the following Air Samples to establish a Base Line action level before start of work.

B. Sample cassettes: Samples will be collected on 25 mm. cassettes as follows:

1. PCM: 0.8 micrometer mixed cellulose ester.

2. TEM: 0.45 micrometer mixed cellulose ester or 0.40 micrometer polycarbonate, with 5.0 micron mixed cellulose ester backing filter.

C. Sampling sensitivity in the table below refers to:

1. Detection Limit for PCM analysis as set forth in the analytical method used

2. Analytical Sensitivity for TEM analysis as set forth in the analytical method used or the AHERA regulation

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Sampling Sensitivity (Fibers/cc)</th>
<th>Minimum Volume (Liters)</th>
<th>Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>2</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Each Work Area</td>
<td>1</td>
<td>Hold for TEM</td>
<td>0.005</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area Phase</td>
<td>2</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area Phase</td>
<td>1</td>
<td>Hold for TEM</td>
<td>0.005</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building</td>
<td>2</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building</td>
<td>1</td>
<td>Hold for TEM</td>
<td>0.005</td>
<td>1,200</td>
<td>1-10</td>
</tr>
</tbody>
</table>
**D. Base Line:** An action level expressed in fibers per cubic centimeter that is twenty-five percent greater than the largest of the following:

1. Average of the PCM samples collected outside each Work Area
2. Average of the PCM samples collected outside the building
3. 0.01 Fibers per cubic centimeter
4. Samples collected for TEM analysis will be held without analysis. These samples will be analyzed under the conditions and terms set forth in "Fibers Counted" and "Affect On Contract Sum."

**E. Daily:**

1. From start of work of Section 01526 Temporary Enclosures through the work of Section 01711 Project Decontamination, the Consultant may be taking the following samples on a daily basis.
2. Samples will be collected on 25 mm. cassettes with the following filter media: PCM 0.8 micrometer mixed cellulose ester.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Sampling Sensitivity (Fibers/cc)</th>
<th>Minimum Volume (Liters)</th>
<th>Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>2</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area at Critical Barrier</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Clean Room</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Equipment Rm.</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Pressure Differential Syst.</td>
<td>1</td>
<td>PCM</td>
<td>0.01</td>
<td>600</td>
<td>1-10</td>
</tr>
</tbody>
</table>

**F.** Changes to these numbers, as required by conditions, may be made by the Consultant with DUR’s approval. If airborne fiber counts exceed allowed limits, additional samples will be taken as necessary to monitor fiber levels.

1.8 **LABORATORY TESTING:**

**A.** The services of a NVLAP/AIHA accredited testing laboratory may be employed by the Consultant to perform laboratory analyses of the air samples. For immediate, on-site PCM analysis, a microscope and technician will be set up at the job site. For TEM analysis, samples will be sent overnight on a daily basis, so that verbal reports on TEM air samples can be obtained within 24 hours.

**B.** The Abatement Contractor will have reasonable access to all air monitoring tests and results.

**C.** Written Reports of all air monitoring tests will be posted by the Consultant at the job site on a daily basis.
1.9 ADDITIONAL TESTING:

A. The Abatement Contractor may conduct his own air monitoring and laboratory testing. If he elects to do this the cost of such air monitoring and laboratory testing shall be at no additional cost to the University.

B. If the Contractor elects to conduct his own air monitoring, it shall not be accomplished by the University’s IH Consultant or the Consultant’s testing laboratory, to avoid potential conflict of interest.

1.10 PERSONAL MONITORING:

A. Consultant will not be performing air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

1.11 MINI-ENCLOSURES AND GLOVEBAGS:

A. Consultant may perform less restrictive monitoring for certain specified contexts, such as Mini-Enclosures and Glove bags (see Sections 01529 and 01561), where the Contractor uses engineering controls and work practices of a less restrictive nature than those required for negative pressure enclosures.

B. Where indicated by the University, work area air monitoring requirements for these exceptional operations will be significantly reduced in scope to appropriately reflect these less restrictive parameters.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION – 01410
SECTION 01415 – TEST LABORATORY SERVICES - ASBESTOS SURVEYS

PART 1- GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF THE WORK:

A. This section describes bulk sampling of suspect asbestos-containing building materials (ACBMs) carried out by the Consultant to verify the presence or confirm the absence of asbestos in specified areas of the University’s building(s) or, necessary, to clarify scope of abatement work.

1.3 SUBMITTALS:

A. Before Start of Work:
   1. Survey protocol
   2. Laboratory Qualifications

B. Periodically During Work:
   1. Verbal Notification of Analytical Results
   2. Written Reports

1.4 ANALYTICAL METHODS:

A. Polarized Light Microscopy (PLM): EPA-mandated Polarized Light Microscopy (PLM) technique described in “Interim Method for the Determination of Asbestos in Bulk Insulation Samples”, Appendix A to Title 40 CFR Part 763, Subpart F. Analysis shall be carried out by a qualified, NIST/NVLAP accredited analytical laboratory.

1.5 LABORATORY SERVICES:

A. General: The services of a qualified testing laboratory will be provided by the IH Services Consultant to perform laboratory analyses of the bulk samples.

B. Laboratory Qualifications: At a minimum, the IH Services Consultant shall submit evidence of successful participation in the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for bulk sample asbestos fiber analysis by Polarized Light Microscopy (PLM) as well as the American Industrial Hygiene Association (AIHA) Proficiency Testing Program (PAT).
PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION:

3.1 SAMPLE NUMBERS AND VOLUMES:

A. General: The number and volume of bulk samples taken by the Consultant will be in substantial accordance with:


   3. Title 40 CFR Part 763, Subpart E [AHERA], section 763.86 – “Sampling”, and


B. Sample numbers and volumes may vary based on characteristics of the building material sampled.

3.2 BULK SAMPLING SURVEYS:

A. General: Where approved by the DUR, survey specified assigned project goals, including but not necessarily limited to:

   1. General information on the quantity and extent of ‘suspect’ ACBMs only,

   2. Specific building system(s) survey only,

   3. Space-by-space comprehensive survey as envisioned by AHERA,

   4. Renovation, repair, or pre-demolition survey limited to building materials indicated on project drawings, specifications, or work orders, or

   5. Specialized surveys of dust, soil, debris, or air contaminants.

B. Design: submit a Survey Protocol to locate suspect ACBMs in accordance with assigned project goals, to include:

   1. List of anticipated building materials types, categorized as either surfacing material, thermal system insulation, or miscellaneous material,

   2. Anticipated number of representative samples collected for each listed material type based on the total square footage of an homogenous area of suspect ACBM,
3. List of building materials which generally may be assumed to contain asbestos and which shall not be sampled nor analyzed (e.g., asbestos-cement products, roofing felts, resilient floor coverings),


C. Review: To the extent feasible, determine architectural, structural, and mechanical conditions of original construction by reviewing as-built drawings, specifications and other archival materials.

D. Inspection: Conduct physical inspections to locate suspect ACBMs within functional spaces of specified buildings.

1. Collect representative samples in accordance with referenced standards.

2. Document sample locations, conditions, and assessments as necessary to accomplish the assigned project goals.

E. Chain-of-Custody: Transport samples using chain-of-custody procedures to a qualified, NIST/NVLAP accredited analytical laboratory.

F. Inspection Reports: Generate such reports as are necessary to identify suspect ACBMs within a functional space; include additional information as necessary to meet project goals (e.g., hazard and engineering assessments, abatement alternatives, cost estimates, CAD drawings, photographs).

G. Labeling: Label ACBMs in accordance with OSHA requirements, as directed by Owner’s Representative.

3.3 ADDITIONAL TESTING:

A. The Abatement Contractor may, from time to time, conduct bulk sampling and laboratory testing.

1. If elected, the cost of such bulk sampling and laboratory testing shall be at no additional cost to the Owner or the IH Consultant.

2. Additionally, all such bulk sampling and testing shall be accomplished by a testing firm other than the IH Consultant or the Consultant’s subcontractors to avoid potential conflict of interest.
3.4 CONFLICT OF INTEREST:

A. The IH Consultant and its Subcontractors are prohibited from simultaneously conducting work on an assigned project for both the Contractor and the University.

END OF SECTION – 01415
SECTION 01420 - TEST LABORATORY SERVICES - LEAD-BASED-PAINT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

B. Surface lead dust wipe sampling and soil sampling during work area clearance are described in section 01421- Project Clearance – Lead-Based Paint.

1.2 DESCRIPTION OF THE WORK

A. This section describes air monitoring, soil sampling and surface lead dust wipe sampling carried out by the University’s IH Consultant to verify that the building beyond the work area and outside environment remain uncontaminated. This section also sets forth baseline levels that the Abatement Contractor must comply with, and describes the action required if the levels are exceeded.

C. Corrective Work triggered by this section is part of the contract sum and is to be performed by the Abatement Contractor at no additional cost to the University.

D. Additional air monitoring required by OSHA and Section 01562, Respiratory Protection, is work of the Contractor and is not covered in this section.

1.3 ANALYTICAL METHODS:

A. Atomic Absorption Spectroscopy or Inductively Coupled Plasma Emission Spectroscopy will be used for analysis of:

1. Surface lead dust wipes samples
2. Air Samples
3. Soil Samples

1.4 ESTABLISH BASELINE LEAD CONCENTRATION:

A. Before start of work the Consultant will secure the following air, dust and soil samples to establish a baseline level.

1. Air Samples: One sample outside work area.
2. Dust Samples: One sample each from floor, interior window sill and window trough in each work area. One sample outside work area at entrance.
3. Soil Samples: One Composite sample per building all sides included.
1.5 **AIR AND SURFACE LEAD DUST MONITORING:** The purpose of the Consultant's air and surface lead dust monitoring will be to detect faults in the work area isolation which may cause contamination of the building or exterior with lead dust.

   A. Should any of the above occur, the Consultant shall contact the DUR and direct the Abatement Contractor to cease Abatement or Hazard Reduction activities. The Consultant shall not authorize the Abatement Contractor to recommence work until authorized by the DUR. The Contractor will correct fault in work area isolation or work procedures at no cost to the University.

1.6 **AIRBORNE LEAD CONCENTRATIONS DURING WORK:** The Consultant shall monitor airborne lead concentrations inside and outside the work area.

   A. **Inside Work Area:** Maintain lead concentrations at lowest possible levels, not to exceed 50 micrograms/cubic meter. If concentrations rise above this figure, revise work procedures to lower lead levels.

   B. **Outside Work Area:** Maintain lead concentrations at lowest possible levels, not to exceed baseline levels. If concentrations rise above baseline levels, stop abatement or hazard reduction work and institute corrective actions. Consultant will determine source of the high reading, and so notify the Contractor and DUR in writing.

1.7 **SURFACE LEAD DUST CONCENTRATIONS:**

   A. **Outside Work Area:** Maintain lead concentrations below baseline levels. Baseline levels will be determined by the Consultant prior to the start of work. If baseline levels are exceeded, the Consultant shall notify the DUR and direct the Contractor to stop all abatement or hazard reduction activities, and institute corrective actions. Consultant will determine source of the high reading, and so notify the Contractor and DUR in writing.

1.8 **SOIL LEAD CONCENTRATIONS:**

   A. **Outside Work Area:** Maintain lead concentrations at or below baseline levels. If concentrations rise above baseline levels institute corrective actions. Consultant will determine source of the high reading, and so notify the Contractor and DUR in writing.

1.9 **CORRECTIVE ACTIONS**

   A. If the high reading above is outside work area, but inside building, and was result of failure of work area containment measures, direct the Contractor to initiate the following actions:

   1. Erect new critical barriers as set forth in section 01506 - Work Area Containment.

   2. Decontaminate affected area in accordance with section 01715 - Project Decontamination at no cost to the University.
B. If the high reading above is soil outside building and was result of failure of work area containment measures, direct the Contractor to initiate the following action; remediate soil in accordance with Section 02066 at no cost to the University.

1.10 SCHEDULE OF SAMPLES: From start of work of Section 01506 - Work Area Containment - Lead-Based Paint through the work of section 01715 Project Decontamination, the Consultant shall take the following samples on a daily basis.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Type Of Sample</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>1</td>
<td>Air</td>
<td></td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>1</td>
<td>Lead Dust</td>
<td>Within Building Adjacent to critical barrier or entrance to work area</td>
</tr>
<tr>
<td>Outside Each Work Area (Exterior Abatement)</td>
<td>1</td>
<td>Soil</td>
<td>Outside regulated area within 10' of barrier fence or tape</td>
</tr>
</tbody>
</table>

1.12 LABORATORY ANALYSIS:

A. The services of an NILAP/AIHA accredited testing laboratory shall be employed by the Consultant to perform laboratory analyses of the air, wipe, and soil samples. For immediate, on-site screening analysis, an x-ray fluorescence (XRF) lead analyzer may be set used at the job site for air, wipe, and soil testing. For all compliance testing, samples will be sent overnight on a daily basis, so that verbal reports on results can be obtained within 24 hours.

B. The Contractor will have reasonable access to all lead monitoring tests and results.

C. Written Reports of all lead monitoring tests will be posted by the Consultant at the job site on a daily basis.

1.13 ADDITIONAL TESTING:

A. The Abatement Contractor may conduct his own lead monitoring and laboratory testing. If he elects to do this the cost of such monitoring and laboratory testing shall be at no additional cost to the University.

B. If the Contractor elects to conduct his own lead monitoring, it shall not be accomplished by the University’s IH Consultant or the Consultant’s testing laboratory, to avoid potential conflicts of interest.
1.14 PERSONAL MONITORING:

A. Consultant will not be performing air monitoring to meet Contractor's OSHA requirements for personnel sampling.

1.15 EFFECT ON CONTRACT SUM: Contractor shall complete corrective work with no change in contract sum if high concentrations were caused by Contractor's activities. The contract sum will be adjusted for additional work caused by high concentrations beyond the Contractor's control.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION - 01420
SECTION 01421 – WORK AREA CLEARANCE - LEAD-BASED PAINT
PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

   1. Visual Inspection: Required as a prerequisite of sampling is set forth in Section 01715 Project Decontamination.

1.2 DESCRIPTION OF THE WORK

A. This section sets forth required surface lead dust concentration in the work area and describes testing procedures the Consultant will use to measure these levels.

B. Soil Testing: This section sets forth required soil lead content measurements conducted on exterior abatement projects which will be used to:

   1. Support pre-and post-abatement comparisons, and

   2. Determine if statistically significant changes in soil lead content exist following completion of abatement.

1.3 ANALYTICAL METHODS:

A. Atomic Absorption Spectroscopy or Inductively Coupled Plasma Emission Spectroscopy will be used for analysis of:

   1. Surface lead dust wipes samples
   2. Air Samples
   3. Soil Samples

1.4 VISUAL INSPECTION:

A. Work of this section will not begin until the visual inspection described in section 01715 Project Decontamination has been completed and certified by the Consultant.

1.5 CLEARANCE CRITERIA:

A. On-site Paint Removal: Clearance will be conducted on three surfaces in each room or area. One each from the floor, window sill and window trough.

B. Off-site Paint Removal: Substrate Removal, Enclosure Projects. Clearance will be conducted on one surface per room or area, equally divided among floors, window sills and window troughs.

C. Wipe Sampling Clearance: Decontamination is complete when every sample is at or below the following levels. If clearance levels are not satisfactory, the decontamination is incomplete and recleaning per Section 01715 - Project Decontamination is required at
no additional cost to the University.

1. Floors: < 40 micrograms per square foot.
2. Window Sills: < 250 micrograms per square foot.
3. Window Troughs: < 400 micrograms per square foot.
4. Exterior: < 800 micrograms per square foot.

D. Soil Sampling Clearance: Remediation is complete when every sample is at or below the following levels. If clearance levels are not satisfactory, the remediation is incomplete and additional remediation per section 02066 is required at no additional cost to the University.

1. Soil: 400 parts per million

1.6. SCHEDULE OF SAMPLES: At the completion of abatement the following samples will be collected.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Type Of Sample</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>3</td>
<td>Lead Dust</td>
<td>Floor / Windows / Sidewalk, as needed</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>1</td>
<td>Lead Dust</td>
<td>Within Building Adjacent to critical barrier or entrance to work area</td>
</tr>
<tr>
<td>Outside Each Work Area (Exterior Abatement)</td>
<td>1</td>
<td>Soil</td>
<td>Outside regulated area within 10' of barrier fence or tape</td>
</tr>
</tbody>
</table>

PART 2 - PRODUCT (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION – 01421
SECTION 01560 – WORKER PROTECTION - IH MONITORING SERVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. This section describes the equipment and procedures required for protecting the IH Consultant’s employees against airborne contaminants on hazard abatement work sites and other workplace hazards except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Respiratory Protection is specified in Section 01562.

1.4 EMPLOYEE TRAINING:


1.5 MEDICAL EXAMINATIONS:

A. **Provide asbestos medical examinations** for all on–site IH Consultant employees who may encounter an airborne asbestos fiber level of 0.1 fl/cc or greater for an 8 hour Time Weighted Average.

1. In the absence of specific airborne fiber data provide medical examinations for all on–site Consultant employees who will enter an asbestos abatement work area for any reason.

2. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1910.1001.

B. **Provide lead medical examinations** for all on–site IH Consultant employees who may encounter an airborne lead level of 30 µg/m³ or greater for an 8 hour Time Weighted Average.
1. In the absence of specific lead exposure data, provide medical examinations for all on–site Consultant employees who will enter a lead abatement work area for any reason.

2. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1910.1025.

C. **Heat Stress:** Include a medical evaluation of the individual’s ability to work in environments capable of producing heat stress.

### 1.6 SUBMITTALS:

A. **Before Start of Work:** Consultant shall submit the following to the DUR for review.
   1. Training certificates: in applicable disciplines
   2. Certificate of Acknowledgement: Submit an original signed copy the Certificate of Acknowledgement found at the end of this section, for each employee who is to enter a hazard abatement Work Area.
   3. Report from Medical Examination: conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each employee who is to enter a hazard abatement Work Area.
   4. Notarized Certifications: Submit certification signed by an officer of the Consultant and notarized that exposure measurements, medical surveillance, and employee training records are being kept in conformance with applicable OSHA General Industry standard.

B. **Periodically During the Work:** Exposure monitoring records in accordance with OSHA requirements.

### PART 2 – EQUIPMENT

#### 2.1 PROTECTIVE CLOTHING:

A. **Coveralls:** University’s Abatement Contractor will provide the IH Consultant’s employees with disposable full–body and head coveralls.
   1. Consultant shall require that they be worn by all on–site employees in hazard abatement Work Area.
   2. Consultant shall ensure that the Abatement Contractor provides a sufficient number, for all required changes, for all on–site employees in the Work Area.

B. **Boots:** Where necessary, Consultant shall provide its employees for the duration of the Project with work boots with non–skid soles, and where required by OSHA, foot protectives, for all on–site Consultant employees.
1. Paint uppers of all boots red with waterproof enamel.

2. Do not allow boots to be removed from the Work Area for any reason, after being exposed to contaminants.

3. Abatement Contractor will dispose of boots in accordance with applicable waste management requirements at the end of the hazard abatement Work.

C. **Hard Hats:** Where required by OSHA, IH Consultant shall provide employees with head protectives (hard hats) for all on–site Consultant employees for the duration of the Project.

   1. Label hats with same warning labels as used on disposal bags.

   2. Require hard hats to be worn at all times that work is in progress that may potentially cause head injury.

   3. Require hard hats remain in the Work Area throughout the work.

   4. Thoroughly clean, decontaminate and bag hats before removing them from a hazard abatement Work Area at the end of the work.

D. **Goggles:** Consultant shall provide eye protectives (goggles) as required by OSHA for all on–site Consultant employees involved in activities which may potentially cause eye injury.

2.3 **ADDITIONAL PROTECTIVE EQUIPMENT:**

A. **Respirator, disposable coveralls, head covers, and footwear covers** will be provided by the University’s Abatement Contractor for the DUR, Project Administrator, and other authorized representatives who may inspect the job site.

   1. At a minimum, Abatement Contractor will have available two (2) respirators and six (6) complete coveralls and, where applicable, six (6) respirator filter changes per day.

   2. Consultant shall verify that the Abatement Contractor makes this additional equipment available.

PART 3 – EXECUTION:

3.1 **GENERAL:**

A. **Consultant shall provide** employee protection as required by the most stringent OSHA or EPA standards applicable to the Work.

   1. Following procedures are minimums to be adhered to regardless of the level of measured contaminants in the hazard abatement Work Area.
2. Each time hazard abatement Work Area is entered;
   a. Remove all street clothes in the Changing Room of the hygiene facilities and put on new disposable coverall, new head cover, and a clean respirator.
   b. Proceed through hygiene facilities and don foot covers.

3.2 DECONTAMINATION PROCEDURES:
A. **Require all Consultant’s employees** to fully adhere to the decontamination procedures in force and in effect at the hazard abatement Work Area.

3.3 PROHIBITIONS:
A. **Employees shall NOT** eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the hazard abatement Work Area.

   B. **To apply cosmetics, eat, drink or smoke**, employees shall follow the procedure described above, then dress in street clothes before entering the non-hazard abatement Work Areas outside of the building.

3.4 CERTIFICATE OF ACKNOWLEDGEMENT:
A. **Following this section** is a Certification of Training.

   B. **After each employee** has been included in the Consultant’s Respiratory Protection Program, completed required training program and medical examinations, secure a fully executed copy of this form.

END OF SECTION – 01560  (Attached Form)
CERTIFICATE OF ACKNOWLEDGEMENT

PROJECT NAME_________________________________ DATE____________________

PROJECT ADDRESS__________________________________ DATE____________________

IH CONSULTANT’S NAME ___________________________________________ 

WORKING AROUND HAZARDOUS MATERIALS SUCH AS ASBESTOS, LEAD DUST, OR HAZARDOUS CHEMICALS CAN BE DANGEROUS.

THE HAZARDS ASSOCIATED WITH SPECIFIC CHEMICAL COMPOUNDS USED IN THE WORK AREA ARE DISCUSSED IN “MATERIAL SAFETY DATA SHEETS” AVAILABLE FROM YOUR EMPLOYER.

Your employer’s contract with the Owner for the above Project requires that: you be supplied with the proper respirator and be trained in its use; and, you be trained in safe work practices and in the use of the equipment found on the job. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: You must have been trained in the proper use of respirators, and informed of the type of respirator to be used on the above referenced project. You must have access to a copy of the written respiratory protection manual issued by your employer. You must be equipped at no cost with the respirator to be used on the above project.

TRAINING COURSES: You must have been trained in the dangers inherent in handling the contaminant and airborne exposures to the contaminant(s), including proper work procedures and personal protective measures. The topics covered in the course must have included the following:

- Physical characteristics of the contaminant
- Health hazards associated with the contaminant
- Respiratory protection
- Use of protective equipment
- Engineering Controls
- Work practices
- Personal decontamination procedures
- Exposure monitoring

MEDICAL EXAMINATION: If you have been overexposed to a contaminant, you must have had a medical examination within the past 12 months at no cost to you.

By signing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer.

Signature ________________________ Social Security No_______________
Printed Name_______________________ Witness________________________
SECTION 01562 – RESPIRATORY PROTECTION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. The IH Consultant shall instruct and train each on-site employee involved in hazard abatement activities around potential airborne contaminants in the proper use of respiratory equipment and require that each on-site employee always wear a respirator, properly fitted on the face.

1. Use of respirators is mandatory in hazard abatement work areas from the start of any operation which may generate airborne contaminants until the work area is completely decontaminated.

2. Use respiratory protection appropriate for the contaminant level encountered in the work place or as required for other toxic or oxygen-deficient situations encountered.

1.3 STANDARDS:

A. Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.


1.4 SUBMITTALS:

A. Before Start of Work: Consultant shall submit the following to the DUR for review.

1. Product Data: Submit manufacturer’s product information for each component used, including NIOSH Certifications for each component in an assembly and/or for entire assembly.

2. System Diagram: When a Type “C” supplied air respiratory system is required by the work, verify that University’s Abatement Contractor submits drawing showing assembly of components into a complete supplied air respiratory system. This should include:

   a. Diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in Work Area(s), routing of air lines to Work Area(s) from compressor.

   b. Complete operating and maintenance instructions for all components and systems as a whole, bound in a form suitable for field use.


4. Respiratory Protection Schedule: Submit level of respiratory protection intended for each operation required by the project. Submit this information on the “Respiratory Protection Schedule” on the form included at the end of this Section.

5. Historic Airborne Contaminant Data: Submit airborne contaminant data to substantiate selection of respiratory protection proposed. Data submitted shall include at least the following for each procedure required by the work:

   a. Date of measurements

   b. Operation monitored

   c. Sampling and analytical methods used and evidence of their accuracy

   d. Number, duration, and results of samples taken

B. Periodically During Work: None

1.5 AIR QUALITY FOR SUPPLIED AIR RESPIRATORY SYSTEMS:

A. The Consultant shall verify that the Abatement Contractor provides air used for breathing in Type “C” supplied air respiratory systems that meets or exceeds standards set for C.G.A type 1(Gaseous Air) Grade H or CSA Z180.1 whichever
presents the more stringent quality standard:

1. Allowable Contaminants: Air that has an airborne contaminant concentration no greater than outside ambient conditions.

2. The following table sets forth the quality of any given contaminant allowed according to the referenced standards:

<table>
<thead>
<tr>
<th>CONTAMINANT</th>
<th>CSA Type I (Gaseous Air)</th>
<th>CSA Z180.1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade D</td>
<td>Grade E</td>
</tr>
<tr>
<td>Carbon Monoxide, PPM/v</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Carbon Dioxide, PPM/v</td>
<td>1000</td>
<td>500</td>
</tr>
<tr>
<td>Condensed Hydrocarbons, mg/m³</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Gaseous Hydrocarbons – as methane, PPM/v</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Water Vapor - PPM/v</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>dew point</td>
<td>-50F</td>
<td>-50F</td>
</tr>
<tr>
<td>Objectionable Odors</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Nitrogen Dioxide, PPM/v</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nitrous Oxide, PPM/v</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sulfur Dioxide, PPM/v</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Halogenated solvents, PPM/v</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other gaseous contaminants</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inorganic particulates, mg/m³</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Indicates that the standard shows no limiting characteristics

   a. The CGA standards do not call out a specific moisture limit when ambient temperature is above freezing. However, since a moisture content no greater than a −50 Degrees Fahrenheit dew point (66 PPM/v) is necessary for carbon monoxide elimination, the CO limits could not be met unless the air were dried to a −50 Degrees Fahrenheit dew point or better.

   b. Maximum allowable content of trichlorotrifluorethane, dichlorodifluoromethane, and chlorodifluoromethane is 2 PPM/v for each. Unlisted contaminants shall not exceed one-tenth of the Threshold Limit Values (TLV’s) for Chemical substances in Workroom air adopted by the American Conference of Governmental Industrial Hygienists (ACGIH).

B. **DELIVERY:** Consultant shall verify that the Abatement Contractor delivers replacement parts, etc., not otherwise labeled by NIOSH, to the job site in manufacturer’s containers.
PART 2 – EQUIPMENT

3.1 AIR PURIFYING RESPIRATORS

B. **Respirator Bodies:** Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit (0 degrees Celsius).

C. **Filter Cartridges:** Provide, at a minimum, HEPA type filters labeled with NIOSH Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with 42 CFR Part 84 and ANSI Z228.2. Also, additional cartridge sections may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH Certification.

D. **Non-permitted respirators.** Do not use single use, disposable or quarter face respirators.

3.2 SUPPLIED AIR RESPIRATOR SYSTEMS:

A. **Provide equipment** capable of producing air of the quality and volume required by the above reference standards applied to the job site conditions and crew size. Comply with provisions of this specification if more stringent than the governing standard.

B. **Face piece and Hose:** Provide full face piece and hose by same manufacturer that has been certified by NIOSH as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure face piece.

C. **Auxiliary backup system:** In atmospheres which contain sufficient oxygen (greater than or equal to 19.5 percent oxygen) provide a pressure-demand full face piece supplied air respirator equipped with an emergency back up HEPA filter.

D. **Escape air supply:** In atmospheres which are oxygen deficient (less than 19.5 percent oxygen) provide a pressure-demand full face piece supplied air respirator incorporating an auxiliary self-contained breathing apparatus (SCBA) which automatically maintains an uninterrupted air supply in pressure demand mode with a positive pressure face piece.

E. **Backup air supply:** Provide a reservoir of compressed air located outside the Work Area which will automatically maintain a continuous uninterruptible source of air automatically available to each connected face piece and hose assembly in the event of compressor shut-down, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the back-up air supply to allow a minimum escape time of one-half hour times the number of connections available to the Work Area. Air requirement at each connection is the air requirement of the respirators in use plus the air requirement of an average-sized adult male engaged in moderately strenuous activity.

F. **Warning device:** Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and work procedures in use, in all parts of the Work Area and at the compressor. Connect alarm to warn of:

1. Compressor shut down or other fault requiring use of backup air supply
2. Carbon Monoxide (CO) levels in excess of 5 PPM/V

G. Carbon Monoxide (CO) Monitor: Continuously monitor and record on a strip chart recorder Carbon Monoxide (CO) levels. Place monitors in the air line between compressor and back-up air supply and between backup air supply and workers. Connect monitors so that they also sound an alarm as specified under "Warning Devices".

H. Compressor Shut Down: Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sound if any of the following occur:

1. Carbon Monoxide (CO) concentrations exceed 5 PPM/v in the air line between the filter bank and backup air supply

2. Compressor temperature exceeds normal operating range

I. Compressor Motor: Provide a compressor driven by an electric motor. Do not use a gas or diesel engine to drive compressor. Insure that electrical supply available at the work site is adequate to energize motor.

J. Compressor Location: Locate compressor outside of building in location that will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

K. Air Intake: Locate air intake remotely from any source of automobile exhaust or any exhaust from engines, motors, auxiliary generator or buildings.

L. After-Cooler: Provide an after-cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

M. Self Contained Breathing Apparatus (SCBA): Configure system to permit the recharging of 1/2 hour 2260 PSI (15.58 MPa) SCBA cylinders.

PART 4 - EXECUTION

4.1 GENERAL:


B. Require that respirators be used in the following circumstances:

1. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any hazard abatement operation which could cause airborne contaminants until the area has been cleared for re-occupancy.

2. Regardless of Airborne Contaminant Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.
C. **Do not allow** the use of single-use, disposable, or quarter-face respirators for any purpose.

**4.2 FIT TESTING:**

A. **Initial Fitting:** Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by an individual qualified to do fit testing. Fit types and sizes of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing has been provided.

B. **On a Weekly Basis,** check the fit of each on-site Consultant employee's respirator by having irritant smoke blown onto the respirator from a smoke tube.

C. **Upon Each Wearing:** Require that each time an air-purifying respirator is put on, it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2.

**4.2 TYPE OF RESPIRATORY PROTECTION REQUIRED:**

A. **Provide Respiratory Protection as indicated in paragraph below.**

1. Where paragraph below does not apply, determine the proper level of protection by dividing the expected or measured airborne contaminant level in the Work Area by the “protection factors” applicable.

2. The level of respiratory protection which supplies an airborne contaminant level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL), is the minimum level of protection allowed.

B. **Administrative Permissible Exposure Limit (PEL):**

1. Asbestos, 8-Hour Time Weighted Average (TWA), to which any on-site Consultant employee may be exposed, shall not exceed 0.01 fibers per cubic centimeter (f/cc) of air.

   a. Asbestos Fibers: For purpose of this section, asbestos fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), or NIOSH Method 7400.

   b. Electron Microscopy: If Electron Microscopy is used to determine airborne fiber levels, only asbestos fibers will be enumerated, but fibers of any size detected by the testing of Section 01714 Work Area Clearance will be counted.

2. Lead, 8-Hour Time Weighted Average (TWA), to which any on-site Consultant employee may be exposed, shall not exceed 50 micrograms per cubic meter (µg/m³) of air.

C. **Respiratory Protection Factor:** Use NIOSH Recommended Protection factors.
D. Air Purifying Respirators:

1. Negative pressure – half or full face mask: Consultant shall supply a sufficient quantity of respirator filters approved for existing contaminants, so that on-site Consultant employees can change filters during the work day.
   a. Require that respirators be wet-rinsed, and filters discarded, each time an on-site Consultant employee leaves the Work Area.
   b. Require that new filters be installed each time that flow through the face decreases to the level at which the manufacturer recommends filter replacement.
   c. Store respirators and filters at the job site in the changing room and protect totally from exposure to contaminants prior to their use.

2. Powered air purifying – half or full face mask: Consultant shall apply a sufficient quantity of high efficiency respiratory filters approved for the existing contaminants so that on-site Consultant employees can change filters at any time that flow through the face decreases to the level at which the manufacturer recommends filter replacement.
   a. Require that HEPA elements in filter cartridges be protected from wetting during showering.
   b. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a worker leaves the Work Area.
   c. Use caution to avoid shorting battery pack during washing.
   d. Provide an extra battery pack for each respiratory so that one can be charging while one is in use.

3. Type “C” Respirator:
   a. Air Systems Monitor: Consultant shall verify that the Abatement Contractor continuously monitors the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation.
   b. Consultant shall verify that the Abatement Contractor assigns an individual, trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring.
   c. Consultant shall verify that the Abatement Contractor assigns no other duties to this individual which may distract from monitoring the system.
RESPIRATORY PROTECTION SCHEDULE:

Project Name _______________________________

Location___________________________________

Date______________________________________

Based upon airborne contaminant levels encountered on previous projects of similar type working on materials similar to those found on the above referenced project, the following level of respiratory protection is proposed for the indicated operations to maintain airborne contaminant levels below the specified Permissible Exposure Limit (PEL) inside the respirator face piece.

<table>
<thead>
<tr>
<th>Operation Description</th>
<th>Anticipated Contaminant Level</th>
<th>Respiratory Protection Factor</th>
<th>Contaminant Level In Mask</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Consultant certifies that to the best of his knowledge and belief the above represent a true and accurate representation of Airborne Contaminant Levels to be expected for the operations indicated, and are based upon airborne contaminant data from past projects with similar materials and operations.

Consultant___________________________________

Signature____________________________________  Date_______________

Print Name___________________________________

Title_________________________________________
SECTION 01711 – PROJECT DECONTAMINATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF REQUIREMENTS:

A. This section describes the IH Consultant’s responsibilities in verifying completeness of the Abatement Contractor’s decontamination work following hazard abatement.

1. Decontamination procedure generally include two cleanings of affected surfaces to remove contamination, thus preventing contamination of the building when reoccupancy by the Abatement Contractor.

2. Where in use, continuous operation of pressure differential system is require during decontamination work to remove airborne contaminants suspended by the hazard abatement work.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Removal of Gross Debris is integral with the performance of hazard abatement work and as such is specified in the Abatement Contractor’s specifications.

B. Work Area Clearance: Testing and other requirements which must be met before release of Contractor and reoccupancy of the work area are specified in Section 01714 – Asbestos Work Area Clearance or 01421 – Lead-Based Paint Work Area Clearance, whichever applies.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION:

3.1 GENERAL:

A. Work Of this Section includes IH Consultant’s verification of the proper decontamination of air in the Work Area which may have been contaminated by;

1. Elevated airborne contaminant concentrations in the space.

2. Pre-existing, elevated airborne contaminant concentrations in the space.

B. Work of this Section includes the IH Consultant’s approval of cleaning, decontamination, and removal of temporary facilities installed prior to hazard
abatement work.

3.2 DECONTAMINATION:

A. **Previous Work:** During completion of hazard abatement work, polyethylene sheeting shall have been removed and disposed of by the Abatement Contractor along with any gross debris generated by the hazard abatement work.

B. **Start of Work:** Work of this section begins with the Abatement Contractor’s cleaning of the Primary Barrier. Where in use, the following engineering controls may be in a place at the start of the Abatement Contractor’s decontamination work:

1. Primary Barrier: Two layers of polyethylene sheeting on floor and walls.
2. Critical Barrier: An airtight barrier between the Work Area and other portions of the building or the outside.
3. Washing Facilities: For personnel and equipment in operating condition.

C. **Verify** that Abatement Contractor carries out a first cleaning of all surfaces of the hazard abatement Work Area.

1. Surfaces to be cleaned include:
   a) Ceilings, walls, floors,
   b) Windows (including sash, jamb, sill), doors,
   c) Fixtures of all kinds,
   d) Sheet, tools, scaffolding and/or staging

2. Exceptions:
   a) Surfaces in rooms visually free of hazardous contaminants,
   b) Surfaces in rooms which was not scheduled for abatement, and
   c) Surfaces which were properly sealed and remained outside of the Work Area.

3. Verify that the Abatement Contractor damp cleans or damp mops and HEPA-vacuums all specified surfaces.
   a) Dry dusting or dry sweeping shall be prohibited.
   b) Each surface of a cleaning cloth shall be used one time only and then packaged as contaminated waste.
   c) Direct the Abatement Contractor to continue his cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

D. **Direct** the Abatement Contractor to remove all filters in pressure differential system(s) and dispose in accordance with waste management requirements.
1. Wait a Sufficient Number of Air Changes to allow HEPA-filtered fan units to clean air of airborne contaminants, where in use.

2. Where appropriate, use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period.

3. Direct the Abatement Contractor to maintain Pressure Differential System, where in use, in operation for the entire air change period.

E. Removal of Primary Barriers: Immediately following the initial cleaning of the Primary plastic, authorize the removal of all Primary Barrier sheeting and Material Decontamination Unit, where in use, leaving only:

1. Critical Barrier: Which forms the sole barrier between the Work Area and other portions of the building or the outside.

2. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.

3. Decontamination Unit: For personnel, in operating condition.


F. Final Cleaning: Direct the Abatement Contractor to carry out a final cleaning of all surfaces in the Work Area in the same manner as the previous cleaning.

1. Contractor’s Inspection: At the completion of the above cleaning, accompany the Abatement Contractor on a visual inspection of all surfaces.

   a) Direct the Abatement Contractor to re-clean if any dust, debris, etc., are observed.

   b) Continue this process until no debris dust or other materials are observed.

2. Wait A Sufficient Number of Air Changes to allow HEPA filtered fan units to clean air of airborne contaminants; direct the Abatement Contractor to continue operation of the Pressure Differential System, where in use, for the entire air change period.

G. Visual Inspection: Conduct a final visual inspection as follows:

1. Allow a sufficient number of air changes after final cleaning. Then perform a complete visual inspection of the entire Work Area including: all surfaces, ceilings, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows and other openings.

   a) Identify debris from any sources, residue on surfaces, dust or other matter.

   b) If any debris, residue, dust or other matter is found, direct Contractor to repeat final cleaning and continue decontamination
procedure from that point.
c) When the area is visually clean, complete the certification at the end of this Section.
d) Visual inspection is not complete until confirmed in writing, on the certification form, by the IH Consultant.

2. ASTM Document 1368-90: “The Standard Practice for Visual Inspections of Asbestos Abatement Projects” shall be used as a reference for proper visual inspection procedures for these types of Projects.

3. Temporary lighting: Provide hand held lights providing 150 foot candles at four (4) feet which are capable of reaching all locations in Work Area.

H. Final Sampling: Conduct in accordance with Sections for Work Area Clearance Testing. After the Work Area is found to be visually clean, samples shall be taken and analyzed:

1. If Release Criteria are met, authorize the Abatement Contractor to proceed to work on removal of Work Area isolation.

2. If Release Criteria are not met, direct the Abatement Contractor to repeat Final Cleaning and continue decontamination procedure from that point. Then, the IH Consultant shall repeat clearance sampling until re-occupancy criteria are met.

3.3 REMOVAL OF WORK AREA ISOLATION:

A. After all requirements of this Section and Section 01714 or 01421-… Work Area Clearance have been met, authorize the Abatement Contractor to;

1. Shut down and remove the Pressure Differential System, where in use.
   a. Seal HEPA filtered fan units with 6 mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area.

2. Remove Personnel Decontamination Unit.

3. Remove the Critical Barriers separating the Work Area from the rest of the building.
   a. Remove any small quantities of residual contaminants found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection.
   b. If significant quantities, as determined by the Consultant, are found then immediately notify the DUR. Upon the DUR’s direction, direct the Abatement Contractor to decontaminate the entire area affected.
4. Remove all equipment, materials, etc., from the work site.

5. Package waste materials in accordance with waste management requirements.

3.4 SUBSTANTIAL COMPLETION OF ABATEMENT WORK:

A. **Hazard Abatement Work is Substantially Complete** upon meeting the requirements of this Section and Sections 01714 and 01421 – … Work Area Clearance, including submission by the Abatement Contractor of:

   1. Certificate of Visual Inspection,
   2. Waste management receipts, as required,
   3. Punch list detailing repairs to be made and incomplete items.

B. **Verification of Hazard Abatement:** IH Consultant shall verify in writing that all substrates identified for hazard abatement have been completely and successfully abated.

C. **Certificate of Visual Inspection:** Complete the certificate following this Section, entitled “Certificate of Visual Inspection.”

END OF SECTION – 01711 (Attached Certificate)
CERTIFICATION OF VISUAL INSPECTION

UNIVERSITY INSTITUTION: ____________________________________________

PROJECT NAME: _____________________________________________________

DATE: _____________________________________________________________

In accordance with Section 01711 “Project Decontamination” the Abatement Contractor hereby certifies that they have visually inspected all surfaces in the work area and have found no dust, debris or suspect residue. Additionally, all substrates identified for hazard abatement have been successfully and completely abated in accordance with the owner’s specifications.

By:

Contractor (Signature) _________________________________ Date ______________

(Print Name) ______________________________________

(Print Title) ______________________________________

IH CONSULTANT’S CERTIFICATION

The IH Consultant hereby certifies that they have accompanied the Abatement Contractor on a visual inspection and verifies that this inspection has been thorough and to the best of their knowledge and belief; the Abatement Contractor’s Certification above is a true and honest one.

By:

IH Consultant (Signature) _________________________________ Date ______________

(Print Name) ______________________________________

(Print Title) ______________________________________
SECTION 01714 – WORK AREA CLEARANCE – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 VISUAL INSPECTIONS

A. Required as a prerequisite of air testing, is set forth in Section 01711 Project Decontamination.

1.3 AIR MONITORING

A. Performed by the Consultant during abatement work, is described in Section 01410 Test Laboratory Services – Asbestos Abatement.

1.4 SUMMARY

A. This Section sets forth required post-abatement airborne asbestos concentrations in the Work Area and describes testing procedures the Consultant will use to measure these levels.

1.5 CONTRACTOR RELEASE CRITERIA

A. The Asbestos Abatement Work Area is Cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified below.

1.6 VISUAL INSPECTION

A. Work of this Section will not begin until the visual inspection described in Section 01711 Project Decontamination is complete and has been certified by the Consultant.

1.7 AIR MONITORING

A. To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Consultant will secure samples and analyze them according to the following procedures.

1.  Aggressive Sampling. All Air Samples will be taken using aggressive sampling techniques as follows:

a. Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.
b. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors of vents.

2. Phase Contrast Microscopy:

a. In each homogeneous Work Area after completion of all cleaning work, a minimum of 7 samples will be taken and analyzed as follows:

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Detection Limit f/cc</th>
<th>Minimum Volume (liters)</th>
<th>Rate LPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>2 - 5</td>
<td>0.01</td>
<td>1,200</td>
<td>2 – 10</td>
</tr>
</tbody>
</table>


c. Fibers: referred to in this section include fibers regardless of composition as counted by the phase contrast microscopy method used.

d. Release Criteria: Decontamination of the work site is complete when every Work Area sample is at or below the Detection Limit above. If any sample is above the Detection Limit then the decontamination is incomplete and recleaning per section 01711 Project Decontamination is required.

3. Transmission Electron Microscopy:

a. In each homogeneous work area after completion of all cleaning work, a minimum of 13 samples will be taken and analyzed as follows:

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Analytical Sensitivity Fibers/cc.</th>
<th>Minimum Volume (liters)</th>
<th>Rate Liters/Minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>0.005</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>0.005</td>
<td>1,200</td>
<td>1-10</td>
</tr>
<tr>
<td>Work Area Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Open for 30 Seconds</td>
</tr>
<tr>
<td>Outside Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Open for 30 Seconds</td>
</tr>
<tr>
<td>Laboratory Blank</td>
<td>1</td>
<td>TEM</td>
<td>0.005</td>
<td>0</td>
<td>Do Not Open</td>
</tr>
</tbody>
</table>

b. Analysis will be performed using the analysis method set forth in the AHERA Regulation 40 CFR Part 763 Appendix A.

c. Asbestos Structures referred to in this Section include asbestos fibers, bundles, clusters or matrices, as defined by method of analysis.

d. Release Criteria: Decontamination of the work site is complete if either of the following two sets of conditions are met:
1. Work Area Samples are below filter background levels
2. All Work Area sample volumes are greater than 1,199 liters for a 25 mm. sampling cassette.
3. The average concentration of asbestos on the five Work Area Samples does not exceed the filter background level of 70 structures per square millimeter of filter area.
4. Work Area Samples are not statistically different from Outside samples

B. LABORATORY TESTING:

1. Phase Contrast Microscopy: The services of a testing laboratory will be employed by the Consultant to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, so that verbal reports on air samples can be obtained immediately. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the DUR and the Contractor.

2. Transmission Electron Microscopy: Samples will be sent by overnight courier for analysis by Transmission Electron Microscopy. Samples will not be carried on weekends, so that samples shipped on Friday will arrive on the following Monday. Verbal results will normally be available during the 5th working day after receipt of samples by the laboratory. The laboratory is capable of analyzing a maximum of 13 such samples from this project at any one time. All Transmission Electron Microscopy results will be available to the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION - 01714