REQUEST FOR PROPOSAL

ASBESTOS ABATEMENT FOR

PALMETTO MIDDLE AND WREN MIDDLE

BID NUMBER: 040419

DATE: MARCH 14, 2019

RETURN BID NO LATER THAN:  
MAIL, HAND DELIVER OR EMAIL BID TO:

<table>
<thead>
<tr>
<th>CLOSING DATE: April 4, 2019</th>
<th>ANDERSON SCHOOL DISTRICT ONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLOSING TIME: 2:00 PM</td>
<td>PO Box 99, (801 N.HAMILTON STREET)</td>
</tr>
<tr>
<td></td>
<td>WILLIAMSTON, SC  29697</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:finleya@apps.anderson1.org">finleya@apps.anderson1.org</a></td>
</tr>
</tbody>
</table>

NOTE: FAX RESPONSES TO THIS BID ARE NOT ACCEPTABLE

ANDERSON SCHOOL DISTRICT ONE (ASD1) ASSUMES NO RESPONSIBILITY FOR IMPROPERLY MARKED OR MISDIRECTED BID RESPONSES AND/OR CORRESPONDENCE RELATED TO THIS DOCUMENT.

PURCHASING OFFICIAL: Lynn Haning  
PURCHASING AGENT  
PHONE NUMBER: (864)847-7344

OFFERORS MUST PROVIDE THE FOLLOWING INFORMATION:

<table>
<thead>
<tr>
<th>NAME OF COMPANY</th>
<th>MAILING ADDRESS</th>
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</thead>
<tbody>
<tr>
<td>(AREA CODE) PHONE NUMBER</td>
<td>CITY STATE ZIP CODE</td>
</tr>
<tr>
<td>FAX #</td>
<td>FEDERAL ID.OR SS #</td>
</tr>
</tbody>
</table>

EMAIL ADDRESS: ____________________________

Minority/Women Owned Business? Yes ~or~ No (circle one)

I/WE THE UNDERSIGNED UNDER PENALTIES OF PERJURY CERTIFY:

1. SUBMISSION OF A RESPONSE TO THIS BID/BID DOES NOT VIOLATE ANY FEDERAL OR STATE ANTI-TRUST LAWS.


3. COMPLIANCE WITH THE CODE OF LAWS OF SOUTH CAROLINA REGARDING THE ETHICS, GOVERNMENT COMPLIANCE WITH S.C. TAX WITHHOLDING AMENDMENTS SECTION 12-9-310(A) 2(3).

4. TO FURNISH ITEM(S) AND OR SERVICE(S) IDENTIFIED HEREIN, AT THE PRICE(S) QUOTED, PURSUANT TO ALL TERMS, CONDITIONS, PROVISIONS AND SPECIFICATIONS CONTAINED IN THIS DOCUMENT OR ANY SUBSEQUENT WRITTEN AMENDMENTS, WHICH CLEARLY REFERENCE THIS BID NUMBER.

5. COMPLIANCE WITH ALL PROVISIONS AND CLAUSES BY REFERENCE IDENTIFIED HEREIN

6. RECOGNITION THAT THIS SOLICITATION IS GOVERENED BY THE ANDERSON COUNTY SCHOOL DISTRICT ONE PROCUREMENT CODE.

______________________________________________        ______________________________________
AUTHORIZED SIGNATURE      AUTHORIZED SIGNATURE
(PRINT/TYPED)

****** BID MUST BE SIGNED BY AUTHORIZED AGENT TO BE VALID ******
SECTION A ~ General Conditions

1. INSTRUCTIONS:
   a. Proposals shall be publicly opened at the stated date and time as indicated in the Request for Proposals and shall be conducted in the ADMINISTRATIVE OFFICE, CONFERENCE ROOM, ANDERSON SCHOOL DISTRICT ONE, 801 N. HAMILTON STREET, (PO BOX 99) WILLIAMSTON, SC 29697.
   b. Sealed proposals shall be enclosed and secured in an envelope. The name of the Proposer shall be displayed on the envelope. Proposals shall be mailed to the ANDERSON SCHOOL DISTRICT ONE, PO BOX 99, WILLIAMSTON, SC 29697 or hand delivered to ANDERSON SCHOOL DISTRICT ONE, ADMINISTRATIVE OFFICE, 801 N. HAMILTON STREET, WILLIAMSTON, SC 29697.
   c. Proposals shall be submitted no later than the stated date and time as indicated in the Request for Proposals to the place and in the manner as described in paragraph 1b above and on the date indicated by the Request for Proposals. Proposals received after this time are considered late proposals. Late proposals shall not be considered, unless the delay was caused by improper handling by the District employees.
   d. The District shall not accept responsibility for unidentified proposals.
   e. In the event that a Proposal is unintentionally opened prior to the official time set for the Proposal opening, the employee opening such a Proposal shall immediately inform the Purchasing Agent or designee who shall in the presence of another employee, shall re-seal the envelope and note on envelope that it was opened in error.
   f. All prices and quotations shall be entered in ink or typewritten and shall remain firm for not less than forty-five (45) days from the date of the Proposal. Mistakes may be crossed out and corrections inserted adjacent thereto and shall be initialed in ink by the person signing the Proposal. The Proposer shall insert the net per stated unit and the extension against each item, which he/she proposed to deliver. The prices shall include in the grand total column all delivery charges, installation, and applicable taxes when necessary.

2. TAXES: It is not necessary to show South Carolina sales tax on the Proposal; however if Proposer prefers to show it, it must be shown as a separate entry on the Proposal total summation. In other words, there shall be a Proposal subtotal with South Carolina tax added in to create a grand total. When required, exemption certificates shall be furnished on forms provided by the vendor.

3. PROPRIETARY INFORMATION: Proposers shall visibly mark as “CONFIDENTIAL” each part of their Proposal which they consider proprietary information. Price may not be considered confidential proprietary information.

4. AMBIGUOUS PROPOSALS: Proposals which are uncertain as to terms, delivery, quantity, or compliance with requirements and/or specifications may be rejected or otherwise disregarded.

5. CONVENANT AGAINST CONTINGENT FEES: The vendor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the vendor for the purpose of securing business. For breach or violation of this warranty, Anderson School District One shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

6. PROPOSER'S QUALIFICATIONS: Proposals shall be considered only from Proposers who are regularly established in the business called for and who in the judgment of the District are financially responsible and able to show evidence of their reliability, ability, experience, equipment supervised by them to render prompt and satisfactory service in the volume called for under this contract.

7. ACKNOWLEDGMENT OF AMENDMENTS TO REQUESTS FOR PROPOSALS:
   a. Proposers shall acknowledge receipt of any amendments to this solicitation either by signing and returning one (1) copy of the amendment or by letter or by telegram.
   b. Anderson School District One must receive the acknowledgment by the time, date and at the place specified for receipt of proposals.

8. AFFIRMATIVE ACTION: The successful Proposer will take affirmative action in complying with all Federal and State requirements concerning fair employment, employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin and/or physical handicap.

9. EXPLANATION TO PROSPECTIVE PROPOSERS:
a. Any prospective Proposer desiring an explanation or interpretation of this solicitation shall request it in writing soon enough to allow a reply to reach all prospective Proposers before submission of their proposals.

b. Oral explanation and/or instructions given before the award of the contract shall not be binding.

c. Any information given to a prospective Proposer pertaining to this solicitation shall be furnished promptly to other prospective Proposers as an amendment, if that information is necessary in submitting proposals or if the lack of it would be prejudicial to other prospective Proposers.

10. **AWARDING POLICY:** The District reserves the right to select and award on an individual item basis, lot (group) basis or an “all or none” basis, whichever the District determines to be most advantageous. Therefore, individual prices per item must be indicated on the Proposal form. Proposers are encouraged to offer discounts for consideration of consolidated award. Furthermore, the District, in determining the lowest responsible Proposer on each of the items shall consider, in addition to the Proposal price, conformity to specifications, delivery, the District’s opinion relative to the quality of materials/services being offered, training, suitability and adaptability of the services required by this solicitation. The District reserves the right to reject or accept any or all proposals and to waive any informalities and/or irregularities thereof.

In the event that identical proposals are received on like items, the Purchasing Agent shall award proposals in accordance with the District’s Procurement Code.

11. **WITHDRAWAL OF PROPOSALS:** Any Proposer may withdraw his Proposal prior to the closing time scheduled for the receipt of proposals. No Proposal shall be withdrawn for a period of forty-five (45) days after the scheduled closing time for the receipt of proposals. The District reserves the right to award the contracts for a period of forty-five (45) days.

12. **SUBMISSION OF DATA:** Each Proposer, upon request, shall submit evidence of liability insurance, Workmen’s Compensation (if required), and other data regarding experience relating to this Proposal and proposes to satisfy the requirements of this solicitation and fulfillment of a contract.

The contractor shall maintain during the entire period of his performance under this contract, the required minimum insurance covering all properties and activities that are encompassed in the performance of the Proposal requirements. The successful vendor must furnish a statement of Workers’ Compensation as required by law and by entering into contract guarantees that said contractor will not file a claim against Anderson School District One.

Prior to the commencement of work hereunder, successful contractor shall furnish to the District, a certificate of the above insurance requirements. The policies evidencing required insurance shall contain an endorsement to the effect that cancellation or any material change in the policies adversely affecting the interests of the District in such insurance shall not be effective without 15 days advance written notice to the District. Failure to replace any canceled insurance shall be deemed a breach of contract by the contractor.

13. **ACCIDENTS:** The vendor shall hold the District harmless from any and all damages and claims that may arise by reason of any negligence on the part of the vendor, his agents or employees in the performance of this contract. In case any action is brought against the District or any of its agents or employees, the vendor shall assume full responsibility for the defense thereof. Upon his failure to do so after proper notice, the District reserves the right to defend such action and charge all costs thereof to the vendor. The vendor shall take all precautions necessary to protect the public against injury.

14. **STATEMENT OF COMPLIANCE AND ASSURANCES:** By submitting a Proposal and signing the Proposal schedule, vendors are providing written assurance of non-collusion and understanding and acceptance of all general and special conditions stated in this contract. In addition, this signature certifies that the firm or agency represented in the Proposal submitted complies with all applicable federal and state laws and regulations.

15. **PROPOSERS RESPONSIBILITY:** Each Proposer shall fully acquaint himself/herself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this Proposal. It is expected that this will sometimes require on-site observation. The failure or omission of a Proposer to acquaint himself/herself with existing conditions shall in no way relieve the Proposer of any obligations with respect to this Proposal or contract. Offerers shall notify the District of ALL COSTS.

16. **FAILURE TO SUBMIT PROPOSAL:** If a recipient does not submit a Proposal or fails to respond by submitting a “no proposal” for three (3) consecutive proposals for the same commodity, they may be removed from the applicable vendor list.

17. **EXAMINATION OF RECORDS:**
   a. Anderson School District One shall have until three (3) years after final payment under this contract access to and the right to examine any of the Contractor’s directly pertinent books, documents, papers or other records involving transactions related to this contract.

   b. The contractor agrees to include in first-tier subcontracts under this contract a clause to the effect that the superintendent of Anderson School District One or his duly authorized representative(s), shall, until three (3) years after final payment under the subcontract, have access to and the right to examine any of the subcontractor’s directly pertinent books, documents, papers or other records involving transactions related to the subcontract(s).
18. **PROPOSAL BOND:** Proposals will be accompanied by a Proposer’s bond or certified check equal to three percent (3%) of the total dollar value of the submitted proposal. When proposal bond is required, it shall be stated so in the Special Proposal Conditions.

19. **MATERIALS REQUIRED:** Materials required must be in conformity with the specifications and shall be subject to inspection and approval after delivery, and shall comply in quality and type of material and method of manufacture with all applicable local or state laws pertaining thereto. The right is reserved to reject and return at the risk and expense of the vendor such portions of any shipment that may be defective or fail to comply with specifications and without validating the remainder of the order.

20. **SAMPLES:** Proposers may be requested to submit samples of all manufactured articles required. Samples submitted by the successful Proposers shall remain in custody of the School District until all units purchased under the various contracts have been delivered and accepted. The District reserves the right to disassemble any unit and subject each unit to any test necessary to determine its strength of character without being responsible for damage to the unit caused thereby. When cuts, drawings, samples, catalog references of detailed descriptions are required to support quotations or items included in the Proposal, it is to be understood that whatever is submitted with the Proposal in compliance with that requirement, will represent what the Proposer actually is offering and not the specifications. Requested samples must be provided at the vendor’s expense.

21. **PACKAGING AND DELIVERY:** All Shipments shall be FOB to the District locations specified. Purchase order numbers and/or contract number(s) as appropriate, must be clearly stated on each carton or package, shipping ticket, invoice, and any/all other information related to the order.

22. **“OR APPROVED EQUAL” CLAUSES:** Certain processes, types of equipment or kinds of materials are described in the specifications and on the drawings by means of trade names and catalog numbers. In each instance where this occurs, it is understood and inferred that such description is followed by the words “or approved equal”. Such method of description is intended merely as a means of establishing a standard of comparison. However, the District reserves the right to select the items which, in the judgment of the District, are best suited to the needs of the District, based on price, quality, service, availability and other relative factors. Proposers must indicate brand name, model, model number, size, type, weight, color, etc. of the item Proposal if not exactly the same as the item specified. Vendor’s stock number or catalog number is not sufficient to meet this requirement. If any Proposer desires to furnish an item different from what is specifically mentioned in the specifications, he/she shall submit with his Proposal the information, data, pictures, cuts, designs, etc., of the material he/she plans to furnish so as to enable the District to compare the material specified; and, such material will be given due consideration. The District reserves the right to insist upon and receive the items as specified, if submitted items do not meet the District’s standards for acceptance.

23. **PATENTS:** The vendor shall hold the District, its officers, agents, and employees harmless from liability of any nature or kind whatsoever, on account of use by the publisher or author, manufacturer or agent, of any copyrighted or non-copyrighted composition, secret process, article or appliance furnished or used under this Proposal.

24. **INSTALLATION:** Where equipment is called for to be installed under this Proposal, it shall be placed, leveled and accurately fastened into place by the vendor. He/she shall be responsible for obtaining dimensions and other such data which may be required to assure exact fit to work under another contract or as intended by the District. The vendor shall be responsible for providing an appropriate amount of lead-in for equipment requiring electrical, water or other basic service. The District will normally be responsible for bringing the appropriate service to the lead-in. The vendor shall completely remove from the premises all packaging, crating, and other litter due to his/her work. He/she shall also be responsible for the cost of repair of any damage to existing work which is caused by him/her during the installation of his/her equipment.

25. **GUARANTEE:** The vendor shall supply a guarantee for all workmanship for the equipment he/she is furnishing for a period comparable to the standards in the industry. When defects or faulty materials are discovered during the guarantee period, the vendor shall, immediately, upon notification by the District, process at his/her own expense, to repair or replace the same.

26. **SERVICE DATA MANUALS:** The Contractor agrees to furnish two (2) copies of a manual, handbook, or brochure containing operation and maintenance instructions (to include pictures, illustrations, schematics and complete repair/test guides as necessary). Where applicable, it shall include electrical data and connection diagrams for all utilities. The instructions shall also contain a complete list of all replaceable parts showing part numbers, nomenclature and quantity required.

27. **PROPER INVOICE:** Invoices submitted for payment for goods or services provided under this contract shall contain, as a minimum, the following information:

- Name of business concern
- Contract number or other authorization for delivery of service or property
- Complete description
- Price and quantity of property or service actually delivered or executed
- Shipping and payment terms.
- Name where applicable
• Title, telephone number and complete mailing address of responsible official to whom payment is to be sent; and
• Other substantiating documentation of information as required by the contract.

28. **TIME OF COMPLETION:** Date of delivery shall be a consideration factor in the awarding process. The Proposer shall include with his/her Proposal delivery dates for each item as requested, and shall furnish all items in accordance with the Proposal solicitation unless an extension was granted by the District in writing.

29. **SERVICE FACILITIES:** In considering the equipment Proposal upon, the District shall take into consideration past performances of existing installations, service and maintenance facilities provided by the Proposer. The Proposer shall have available a local service organization that is trained in the proper servicing of equipment.

30. **PERFORMANCE BOND:** The successful Proposer shall furnish within ten (10) calendar days, after written notice is issued indicating proposal acceptance, a performance bond. Contractor shall provide and bear the burden of the cost of the performance bond. The bond shall represent one hundred percent (100%) of the total proposal sum. Each bond shall be issued by a Surety Company licensed in the State of South Carolina, with an “A” minimum rating of performance as listed in the current publication of “Best’s Key Rating Guide, Property Liability”, which shall indicate a financial strength rating of at least five (5) times the total proposal sum. Each bond shall be accompanied by a “Power of Attorney” authorizing the attorney-in-fact to bind the surety and certified to include the date of the proposal bond.

31. **LIQUIDATED DAMAGES:** Should the Contractor fail to complete the contract within the established time limit, or at the later date as authorized in writing by the Purchasing Agent he/she shall pay liquidated damages in the sum of one hundred dollars ($100.00) per day minimum and/or in accordance with the District Procurement Code.

32. **S. C. LAW CLAUSE:** Upon award of a contract under this Proposal, the person, partnership, association, or corporation to whom the award is made must comply with the laws of South Carolina which require such person or entity to be authorized and/or licensed to do business in this State. Notwithstanding the fact that applicable status may exempt or exclude the successful Proposer from requirements that it be authorized and/or licensed to do business in this state, by submission of this signed Proposal, the Proposer agrees to subject itself to the jurisdiction and process of the courts of the State of South Carolina as to all matters and disputes arising or to arise under the contract and the performance thereof, including any questions as to the liability for taxes, licenses, or fees levied by the State.

33. **COMPETITION:** There are no Federal or State laws that prohibit Proposers from submitting a Proposal lower than a price or Proposal given to the United States Government. Proposers may proposal lower than United States Government Contract price without any liability because the State is exempt from the provisions of the Robinson-Patman Act and other related laws.

34. **EXCUSABLE DELAY:** The Contractor shall not be liable for any excess costs if the failure to perform the contract arises out of causes beyond the control and without the fault or negligence of the contractor. Such causes may include, but are not restricted to acts of God or of the public enemy, acts of the government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the contractor. If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the contractor and subcontractor, and without the fault or negligence of either of them, the contractor shall not be liable for any excess costs or failure to perform, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the contractor to meet the required delivery schedule.

35. **ASSIGNMENT:** No Contract may be assigned, sublet, or transferred without a written consent of the Purchasing Agent.

36. **SPECIFICATIONS:** Any deviations from specifications indicated herein must be clearly pointed out; otherwise, it will be considered that the items offered are in strict compliance with these specifications, and the successful Proposer shall be held responsible thereof. Deviations must be explained in detail on separate sheets and be attached to the submitted Proposal.

37. **PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS:**
   a. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as grass, trees, and shrubs) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees broken during contract performance, or by any careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with tree pruning compound as directed by the District representative(s).
   b. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are known to or should be known by the Contractor. The Contractor shall repair any damages to those facilities, including those that are the property of a third party resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damaged property, the District representative(s) may recommend that the necessary work be performed and charge the cost to the Contractor.

38. Documentation contained in section “C” shall be completed and submitted along with Proposal.
39. **TERMINATION:** Subject to the provisions below, the contract may be terminated by the Purchasing Agent, providing a thirty (30) day advance notice in writing is given to the Contractor.
   a. **Termination for Convenience:** In the event that this contract is terminated or canceled upon request and for the convenience of the District without the required thirty (30) day advance notice, then the District shall negotiate reasonable termination costs, if applicable. This does not apply in the case of non-appropriation.
   b. **Termination for Cause:** Termination by the District for cause, default or negligence on the part of the Contractor shall be excluded from the foregoing provision; termination costs, if any, shall not apply. The thirty (30) day advance notice requirement is waived and the default provision in the Proposal shall apply.

40. **DEFAULT:** In the event the successful contractor defaults on any part or all of his Proposal, Anderson School District One reserves the right to purchase any or all of the services in default in the open market and charge the defaulting contractor for the difference of the cost. Should such charge be assessed, no subsequent proposals of the defaulting contractor shall be considered unless assessed charge has been satisfied.

41. **DRUG FREE WORKPLACE:** This contract is subject to the Drug Free Workplace Act if the stated or estimated value is Fifty Thousand Dollars or more. The contractor shall comply with all terms and conditions of the Drug Free Workplace Act, S. C. CODE ANN. 44-107-10 et seq. (1976 as amended), if this contract is for a stated or estimated value of Fifty Thousand Dollars or more. By signing this Proposal, you are certifying that you will comply with the Drug Free Workplace Act.

42. **RIGHT TO PROTEST:** Any vendor desiring to exercise rights under section XIV.A (SC 11-35-4210 - right to protest) of the Anderson County School District One Procurement Code should direct all correspondence to: Purchasing Agent, Anderson County School District One, PO Box 99, Williamston, SC 29697. Note: Does not apply to small purchases (less than $50,000, in actual or potential value).

43. **POSTING OF AWARD:** Notice of Award or Intent to Award will be posted in the Purchasing Department located at the 801 N. Hamilton Street, Williamston, SC 29697. If the total value of the contract resulting from this solicitation is less than $100,000.00, Proposers who desire to receive a copy of the Statement of Award must include a self-addressed stamped envelope. All Proposers will receive an “Intent to Award” should the total value of any contract resulting from this solicitation is $100,000.00 or greater.

44. **NON-APPROPRIATIONS:** Any contract entered into by Anderson School District One resulting from this Request shall be subject to cancellation without damages or further obligation when funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period or appropriated period.

45. **CONFLICT OF INTEREST:** Vendor warrants it has no interest and shall acquire no interest that would directly or indirectly conflict in any manner or degree with the performance of this proposal.

46. **FEDERAL DEBARMENT STATUS:** Expenditures or contracts involving federal funds are subject to Federal Rules and Regulations. Therefore, when expenditures or contracts are to be paid with federal funds, federal funds, Federal Regulation 7CFR 3017 regarding Federal debarment status will apply. For further information regarding 7 CRF 3017 Government wide Debarment and Suspension, refer to [http://www.access.gpo.gov/nara/cfr/index.html](http://www.access.gpo.gov/nara/cfr/index.html).

47. **IMMIGRATION REFORM AND CONTROL ACT OF 1986:** By submitting a Bid, Bidders certify they do not and will not during the performance of this contract employ illegal alien workers or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986.

48. **SUBSTANCE FREE ENVIRONMENT:** The uses of tobacco, drugs, or alcohol is prohibited in all District buildings, vehicles, and on the grounds of all District facilities.

49. **SEVERABILITY:** Should any provision of this contract be declared to be invalid by any court of competent jurisdiction, such provisions shall be severed and shall not affect the validity of the remaining provisions of this contract.

50. **CERTIFICATION & COMPLIANCE:** The undersigned agrees to furnish the commodity and/or services stipulated in the attached invitation, at the prices and terms stated, subject to the general conditions outlined and the specific conditions identified. A signed purchase order furnished to the successful bidder results in a binding contract without further action by either party.

**Note:** No qualified individual with a disability shall, by reason of such disability, be excluded from participating in or be denied the benefits of services, materials and/or equipment, or be subjected to discrimination by Anderson School District One.
March 14, 2019

RE: Anderson School District, Palmetto/ Wren Middle School

Subject: Proposal Request for Asbestos Abatement

Anderson School District One is requesting proposals from firms licensed to provide asbestos abatement services for the Palmetto Middle School project, and Wren Middle School project.

The construction documents are currently 75% complete. The design is complete to a level so as to provide information on the construction types at each school. To obtain an electronic set of the current documents please contact Gwinn Harvey (Craig Gaulden Davis), Project Architect, at Gwinn G Harvey gharvey@cgdarch.com.

A construction schedule for each project is provided herein. The projects will be performed in a series of phases. Asbestos abatement work shall be performed at the commencement of each phase. Schedules are currently being reviewed by the Construction Manager At Risk to reduce the overall project durations.

Abatement scopes shall be performed in accordance with the Abatement Plan provided by Terracon. Proposers shall coordinate with the testing and inspection agency to oversee the abatement scope, Construction Manager At Risk, and Design Team. The awarded abatement contractor shall obtain a clearance letter from the testing agency upon completion of abatement of each phase.

Your proposal shall include a lump sum cost for the abatement scope and shall be listed per project. A “combination” price may be offered for consideration should the combined proposal for each project be less than the sum total of each individual project. Please note that the both projects will be executed concurrently based on the provided phasing schedules. The proposer will be requested to provide adequate documentation to support the ability to properly staff the execution of the work prior to award. Lump sum proposal should include the number of calendar days to complete the abatement scope in each phase.

Questions concerning the scope shall be submitted to Andy Finley.

Please submit your proposal to this office on or before April 4, 2019 at 2:00 PM. Proposals received after this defined date and time will not be considered.

Please call if you have any questions.

Sincerely,

Andy Finley
Director of Special Projects/ Safety
Anderson School District One
801 N. Hamilton St.
Williamston, SC 29697
864-982-2438
finleya@apps.anderson1.org
Asbestos Abatement Plan

Palmetto Middle School
803 North Hamilton Street
Williamston, South Carolina
March 6, 2019
Terracon Project No. 86197015

Prepared for:
Anderson School District 1
Williamston, South Carolina

Prepared by:
Terracon Consultants, Inc.
Greenville, South Carolina

Jeffrey A. Gurrie, CIH
SC Asbestos Project Designer #ASB-22728
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APPENDIX

Additional Sampling Table and Analytical Results

DRAWINGS

Figure A1 Work Area Overview
SECTION 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PROJECT DIRECTORY

Owner: Anderson School District 1
801 N Hamilton Street
Williamston, South Carolina 29697
Representative: Andy Finley

Designer: Terracon Consultants, Inc.
72 Pointe Circle
Greenville, South Carolina 29615
Representative: Jeffrey Gurrie

PROJECT/WORK IDENTIFICATION

The project name is Asbestos Abatement for Palmetto Middle School located at 803 North Hamilton Street in Williamston, South Carolina. The project involves the removal of asbestos-containing materials (ACM). A copy of the Asbestos Hazard Emergency Response Act (AHERA) is available for review by the Owner and is incorporated by reference. Additionally, several supplementary samples were collected by Terracon Consultants, Inc. (Terracon) and is presented in Appendix A.

This Work involves abatement of various materials in areas within the defined Work area identified on Figure A1 in Appendix B. The materials identified consist of:

- Bottom layer of floor tile and associated mastic throughout the school;
- Cove base mastic,
- Thermal system insulation on mechanical components;
- Interior door/window caulk (including hallway windows);
- Exterior door/window caulk;
- Cementitious panels (Transite), and
- Roofing materials.
In general the Work will consist of the following:

I. Thermal System Insulation (TSI)
   A. Remove and dispose of asbestos-containing TSI on mechanical components (boilers, tanks, ducts) in boiler room. Removal shall be within a negative pressure enclosure (full containment). See Section 02081 for additional work practices. Piping extends sub-grade from boiler room and the exact path is unknown. Contractor shall provide an alternate cost for the removal of sub-grade pipe insulation.

II. Miscellaneous Materials
   A. Floor tile and associated mastic. The lower layer of floor tile throughout the school contains asbestos. Due to the layered system removal shall be within a negative pressure enclosure (full containment), unless the contractor can demonstrate both layers of floor tile can be removed intact. See Section 02081 for additional work practices.
   
   B. Caulking. Remove and dispose of asbestos-containing gray, black, and white caulking at windows and doors throughout the building (interior and exterior). Polyethylene sheets or other resilient drop cloths or tarps shall be placed on the surfaces inside and outside the base of each component prior to the start of caulking removal. The dimensions of each drop cloth shall be large enough to catch pieces of caulking that may fall or be dislodged from the component during removal and handling. See Section 2081 for additional work practices.
   
   C. Cementitious Panels (Transite). Remove and dispose of asbestos-containing cementitious panels throughout the building (interior and exterior). These panels exist at covered walkways, building overhangs, window panels, and in ceilings of some rooms of the school (bathrooms, kitchen areas, boiler rooms, janitor's rooms, locker rooms).
   
   D. Roofing Materials. Roofing materials are assumed to contain asbestos until sampling proves otherwise. Provide an alternate cost for removal of roofing materials. Remove and dispose of asbestos-containing roofing materials. This material should be removed intact as a non-regulated, non-friable material. See Section 02081 for additional work practices.

III. Non-Asbestos Materials
   A. Non-ACM materials such as ceiling tile may be removed to access ACM. These materials may be disposed of as construction waste. Waste shall be containerized and promptly disposed of offsite.
SUMMARY OF WORK

The Work includes removal and disposal of ACM and non-ACM designated above and on Figure A1. The Work shall be conducted and techniques utilized as specified in the documents.

Contractor will provide, erect and maintain all barricades, traffic control devices, hand railings, toe boards, safety devices, scaffolds, safety measures and security measures necessary for the protection of the Contractor’s employees, Owner, Designer, and Air Monitoring Firm until the completion of work specified under this Agreement. Safety devices removed during abatement (handrails, flooring, etc.) must be corrected, reinstalled, or demarcated to prevent safety issues.

Negative pressure and a full containment shall be established during all regulated removal activities. Manometer readings are required during the entire project. Readings may be a continuous strip or documented in writing by the Abatement Contractor at each location at least four times per 8-hour work shift.

Asbestos containing material found to extend from the designated areas into, through, above, or below walls, ceilings, roofs or other barriers is also included in this specification. The Contractor is responsible for verifying quantities and locations of asbestos-containing materials at this facility. The Contractor will refer to Section 02081 for specified procedures pertaining to Work Area designations.

General and Administrative: Requirements are set forth in the following specification sections:

01013 Summary of the Work - Asbestos Abatement
01043 Project Coordination - Asbestos Abatement
01091 Definitions, Codes, Regulations and Standards – Asbestos Abatement

Abatement Work: Requirements are set forth in the following specification sections, listed here according to the sequence of the Work:

01091 Definitions, Codes, Regulations and Standards - Asbestos Abatement
01410 Air Monitoring
01503 Temporary Facilities - Asbestos Abatement
01513 Exhaust Ventilation System
01560 Worker Protection – Asbestos Abatement
01562 Respiratory Protection
01563 Decontamination Units
Asbestos Abatement Plan  
Palmetto Middle School  ■ Piedmont, SC  
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Asbestos Removal Work: Procedures are described in the following specification sections:

- 02081 Removal of Asbestos Containing Materials
- 02084 Disposal of Asbestos Containing Materials
- 09805 Lock Down Procedures

POTENTIAL HAZARDS

The disturbance or dislocation of asbestos materials may cause asbestos fibers to be released into the building’s atmosphere, thereby creating a potential health hazard 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 hazard and of proper work procedures which must be followed.

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 asbestos-containing materials, take appropriate continuous measures as necessary to protect staff and occupants of Greenville Technical College (including buildings adjacent to the site) from the potential hazard of exposure to airborne asbestos. Such measures will include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

ASBESTOS-CONTAINING MATERIALS

The known asbestos-containing materials to be removed are identified in the asbestos inspection report. The Contractor is responsible for verifying all existing conditions and quantities at these facilities.

OWNER OCCUPANCY

Partial Owner Occupancy: The Owner reserves the right to place and install equipment as necessary in areas of the buildings in which asbestos abatement and project decontamination procedures have been completed, and to occupy such completed areas prior to substantial completion, provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work or any part of the Work.

The Owner will occupy parts of the building that are not included in the scope of work. The contractor shall isolate the work area using lockable hard barriers from occupied areas of the building.
PROTECTION OF EXISTING ITEMS

Contractor shall be responsible for maintaining furnishings, driveways, and equipment not specified for removal and disposal. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor. The Owner will provide the Contractor a written list of salvaged items (if any) and a storage location for items to be moved and turned over. The Contractor is responsible for removing these items without damage and transporting to the designated storage location onsite.

AIR MONITORING

The Owner will contract a firm to provided area air monitoring prior to, during, and after abatement of materials by the Contractor. The Contractor is responsible for OSHA compliance monitoring. The Owner’s air monitoring firm WILL NOT analyze samples for Contractor’s OSHA compliance.

Samples must be analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory. When fiber counting is performed onsite, the analyst must be proficient in AIHA’s Asbestos Analysts Registry (AAR) program or in the company’s laboratory which must be proficient in AIHA’s Proficiency Analytical Testing (PAT) program. The Air Monitoring Firm shall also have in place a quality assurance program for the analysis of samples during abatement.

The role of the Air Monitoring Firm is to act as the Owners onsite representative and it will communicate with the Owner and Designer as to compliance with applicable regulations and written specifications. The Air Monitoring Firm shall be prepared to enter regulated areas to verify Contractor’s work practices at any time during the project as well as perform verification on containment construction and work practices during and at critical junctures throughout the project.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION
SECTION 01043 - PROJECT COORDINATION – ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Minimum administrative and supervisory requirements necessary for coordination of Work on the project include but are not necessarily limited to the following:

- Administrative and supervisory personnel
- Special reports

ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

General Superintendent: Maintain a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 CFR 1926 for the Contractor and is the Contractor's representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to asbestos containing materials. This person should have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, have had a minimum of five years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. The General Superintendent must have had responsible charge of a minimum of three (3) asbestos abatement projects similar in size and type to the work of this contract.

Head Foreman: Maintain one Head Foreman experienced in supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have not less than five years of full-time experience in responsible charge of asbestos removal operations similar in scope and magnitude to this project. Head Foreman must remain onsite at all times the Work is in progress.

Crew Leader: For every ten asbestos removal workers (laborers) utilized on this project, provide one experienced AHERA accredited Supervisor having three years minimum experience in successful asbestos removal operations similar in scope and magnitude to this Project. A minimum of one crew leader is required to remain inside EACH work area at all times the Work is in progress.
COORDINATION:

Coordinate construction operations and scheduling with partial occupancy requirements of the Owner and the Owner's use of utilities.

Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly completion of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

An initial progress meeting, recognized as "Pre-Construction Meeting" will be convened by the Owners representative prior to start of any work. The preconstruction meeting will be scheduled before start of construction, at a time convenient to the Owner and the Owners Representative, but no later than 15 days after execution of the Agreement. Meet at the project site, or as otherwise directed, with General Superintendent, Owner, Designer, Project Administrator, and other entities concerned with the asbestos abatement work.

SPECIAL REPORTS:

General: Except as otherwise indicated, submit special reports directly to Owner within one day of occurrence requiring special report, with copy to Designer and others affected by occurrence.

Reporting Unusual Events and Inspections by Regulatory Officials: When an event of unusual and significant nature occurs or inspection by an outside party, etc. prepare and submit a special report listing chain of events, persons participating, response by Contractors' personnel, evaluation of results or effects, and similar pertinent information. When such events are predictable, advise Owner at earliest possible date. In the event of inspections by regulatory officials the contractor shall contact the Owner and Designer immediately.

Reporting Accidents: Prepare and submit reports of accidents, at site and anywhere else Work is in progress. Record and document data and action; comply with industry standards. For this purpose, an accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event poses a significant threat of loss or personal injury.

Pre-Construction Inspection: Inspect areas in which work will be performed, prior to commencement of work. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions (with permission from the Owner) as necessary to document conditions. Submit to Owner/Designer for record purposes prior to starting work.

Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or Work Area isolation procedures.
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Include in plan specific procedures for decontamination or Work Area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

Project Directory: Develop a directory of all entities involved in the project. Post copies of the Project Directory in the temporary field office. Include the 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, mobile phone numbers and addresses of:

1. Owner, Designer, and Project Administrator
2. Contractor's General Superintendent, supervisory personnel and Contractor's 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.

Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit to the Owner and Designer 10 days prior to the date established for "Commencement of the Work." Work will not commence until a written schedule is submitted.

Progress Meetings: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Contractor shall hold general progress meetings as required. Meetings shall be every two weeks at a minimum. Representatives of the Owner will attend these meetings. In addition to representatives of the Contractor, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the work. The Contractor shall prepare meeting minutes and distribute to the attendees within 48 hours of the meeting.

General Work Plan: The contractor shall develop a written work plan to define work areas, anticipated decontamination/loadout unit locations, and waste container location prior to mobilization to the site. Submit to the Owner and Designer 10 days prior to mobilization.

SUBMITTALS:

Refer to Section 01300 for specific details on these required submittals.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION
SECTION 01091 - DEFINITIONS, CODES, REGULATIONS AND STANDARDS
ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DEFINITIONS:

Adequately Wet: To sufficiently mix or penetrate with liquid to prevent the potential release of particulates.

Aerosol: A system consisting of particles, solids or liquids, suspended in air.

Airlock: System for permitting ingress and egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways protected by two overlapping polyethylene sheets and separated by a sufficient distance such that one passes through one doorway into the chamber, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway. The airlock maintains a pressure differential between the contaminated and uncontaminated areas thereby further minimizing flow-through contamination.

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

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

Asbestos: The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

Asbestos-Containing Material (ACM): Any material containing more than 1 percent by weight of asbestos of any type or mixture of types.

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.
Authorized Visitor: The Owner, the Designer, or a representative of any federal, state and local regulatory or other agency having authority over the project.

Barrier: Any surface that seals off the Work Area to inhibit the movement of fibers.

Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 inches to 9 inches.

Category I nonfriable asbestos-containing material (ACM): Nonfriable asbestos or nonfriable asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.

Category II nonfriable ACM: Any material other than packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos that cannot, when dry be crumbled, pulverized, or reduced to powder by the force expected to act upon it in the course of demolition or renovation operations.

Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers’ street clothes and protective equipment. Also known as the "Change Room."

Clearance monitoring: Area air sampling performed using aggressive clearance sampling techniques to determine the airborne concentrations of residual fibers upon conclusion of asbestos abatement.

Curtained Doorway: A device to allow ingress and egress from one room to another while minimizing air movement between the rooms. Typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway and securing each along the top of the doorway, with the vertical edge of one along one vertical side of the doorway, and the vertical edge of the other along the opposite vertical side. Two curtained doorways spaced a minimum of three feet apart for an airlock.

Decontamination Enclosure System: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains an airlock.

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operation.
Disposal Bag: Six mil thick leak-tight plastic bags used for transporting asbestos waste from Work Area to disposal site.

Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

and

Name of Waste Generator:
(Name of Contractor and Owner)

Location of Waste Generated:

Encapsulation: A form of abatement involving the treatment of regulated asbestos-containing material (RACM) with a liquid which covers the surface with a protective coating (bridging) or embeds fibers in an adhesive matrix (penetrating) to prevent the release of asbestos fibers.

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

Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the Work Area, a washroom, and an uncontaminated area.

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

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

Friable Asbestos-containing Material: Any material that when dry can be or has been crumbled, pulverized, or reduced to powder, and contains more than 1 percent asbestos.
Glovebag: A single use sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

Grind: To reduce to powder or small fragments. Grinding includes mechanical chipping or drilling.

HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns in length.

HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High Efficiency Particulate Absolute filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97 percent efficiency for retaining fibers of 0.3 microns or larger.

Holding Area: A chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system. The holding area constitutes an airlock.

Local Exhaust Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the Work Area and a constant air flow from adjacent areas into the Work Area and exhausting that air outside the Work Area.

Lockdown: A procedure whereby the surface of the Work Area is coated with latex paint or other suitable sealant, using an airless sprayer, after final visual clearance from the Air Monitoring Firm, Designer or Owner, to fix in place and render non-friable, any traces of asbestos material that may remain.

Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (Work Area).

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.

Owner/Operator: Any person or contractor who owns, leases, operates, controls, or supervises a facility being demolished or renovated, or any person who operates, controls, or supervises the demolition or renovation operation, or both.

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

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.
Regulated Asbestos-Containing Material (RACM): (a) Friable asbestos-containing material; (b) Category I nonfriable ACM that has become friable; (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 is likely to become 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.

Removal: The act of removing asbestos-containing or contaminated materials from a structure and depositing in a suitable disposal site.

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

Shower Room: A room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.

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

Testing Laboratory: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report results of those inspections or tests.

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

Washroom: A room between the Work Area and the holding area in the equipment decontamination enclosure system. The washroom constitutes an airlock.

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.

Work Area: The area(s) 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 1926.1101.
CODES, REGULATIONS, AND STANDARDS:

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, 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 are bound herewith.

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 Owner and Designer harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

Federal Requirements: Which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

U.S. Department of Labor, Occupation Safety and Health Administration, (OSHA), including but not limited to:

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations

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

Construction Industry
Title 29, Part 1926, of the Code of Federal Regulations
Access of Employee Exposure and Medical Records
Title 29, Part 1910, Section 120 of the Code of Federal Regulations

Asbestos Hazard Emergency Response Act
40 CFR Part 763 (The Final Rule)
Asbestos Abatement Plan
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Hazard Communication
Title 29, Part 1910, Section 1200 of the
Code of Federal Regulations
Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, Section 145 of the
Code of Federal Regulations

U. S. Environmental Protection Agency (EPA) including but not limited to:

Asbestos Abatement Projects Rule
40 CFR Part 762
CPTS 62044, FRL 2843-9
Federal Register, Vol 50 No 134, July 12, 1985
P28530-28540

Regulation for Asbestos
Title 40, Part 61, Sub-part A of the
Code of Federal Regulations

National Emission Standard for Asbestos
Title 40, Part 61, Sub-part M (Revised Sub-part B)
of the Code of Federal Regulations

EPA Guidance Documents: which discuss asbestos abatement work or hauling and
disposal of asbestos waste materials are listed below for the contractor's information only.
These documents do not describe the Work and are not a part of the Work of this
contract. EPA maintains an information number (800) 334-8571; publications can be
ordered from (800) 424-9065 in Washington, DC):

Parts 1 & 2. (Orange Books) EPA C00090 (out of print)

Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule
(40 CFR Part 763).

Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA
560/5-84-006.

Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA
560/5-84-006.

Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA
560/5-85-018.
Asbestos Waste Management Guidance. EPA 530-SW-85-007.


State Requirements: South Carolina Department of Health and Environmental Control (SCDHEC) Regulation 61-86.1 Standards of Performance for Asbestos Projects. Abide by all state rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing or hauling and disposal of asbestos waste material.

Local Requirements: Abide by all local rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing, or hauling and disposal of asbestos waste removal.

Industry Recognized Standards


END OF SECTION
SECTION 1300 - SUBMITTALS

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK

General: The required submittals are identified in this section and/or elsewhere in the Specification. Make submittals to the Owner in a timely manner and at appropriate times in the execution of the Work to allow for sufficient and prompt review by the Owner. Removal work will not commence until submittals are received by the Owner and/or Designer. Revise and resubmit as necessary.

Submittals as required in the Contract Documents shall be submitted in electronic format (PDF). Submit complete sets to the Owner and/or Designer for his review of "Pre-Job Submittals" on or before the date of the pre-construction meeting. The Work may not proceed until the complete pre-job submittal package has been reviewed and approved by the Owner and/or Designer.

Submit complete sets to the Designer for his review of "Post-Job Submittals" following the final completion of the Work. Request for final payment will not be approved until the post-job submittal package has been reviewed by the Owner and/or Designer.

Identify individual submittals by name and include a table of contents in each submittal package.

Pre-Job Submittals.

1. Permits: Permits required for the removal, encapsulation, handling of asbestos containing materials, and general contracting will be obtained by the Contractor.

The Contractor shall obtain all permits required by state and/or local regulatory agencies or jurisdictions for the transportation and disposal of asbestos containing waste.

Post one copy of all permits at the Work site. Keep on file in the Contractor's office one copy of each and provide a current copy of each to the Owner.
2. Submit complete information relative to the following:

Submit a copy of the completed Asbestos Removal Notice Form.

Submit South Carolina Licenses for all workers and supervisors participating on the project.

Submit names of Supervisory personnel including superintendent, head foreman, crew leader(s), and workers and their qualifications and training including:

Individually signed Respiratory Training Form or equivalent for each worker to be utilized on the project.

Individually signed Certificates of Worker Training or equivalent for each worker to be utilized on the project.

Contractor's affidavit that all Contractor's employees on this project have successfully completed medical surveillance as required by 29 CFR 1926 and the statement by a medical doctor.

Hazardous Waste Management Plan.

3. For each Work Area, submit a plan of action: Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the abatement plan, a contingency emergency plan, the location and layout of the de-contamination areas, the sequencing of asbestos work, methods to be used to assure the safety of site visitors, disposal plan, including location of approved disposal site, and a detailed description of the methods to be used to control pollution and ensure site security. Expand upon the use of portable HEPA ventilation systems, closing out of the building's HVAC system, method of removal to prevent visible emissions from the Work Area, and packaging of removed asbestos debris. Include sequencing and schedule for installation of architectural finishes/materials. The plan must be approved by the Designer prior to commencement of Work.

Submittals During the Work and Post Job Submittals: All submittals must be turned over to the Owner and/or Designer as outlined below.

1. Revise and submit progress schedule as needed.
2. Submit training certificates for all new or additional employees before their assignment to the project.
3. A copy of daily security, worker, and visitor log signed by the superintendent on a weekly basis.

4. Static pressure differential records on a weekly basis.

5. Submit a copy of employee air monitoring results relative to OSHA respiratory protection level compliance on a weekly basis.

6. Transport manifests and landfill receipts as they are received.

7. Post-job submittals must be turned over to the Owner and/or Designer no later than ten working days after completion of Work and prior to the final request for payment.

Submittals for Air Monitoring Firm:

1. Submit required information outlined in Section 01410 to the Designer.

2. Prior to mobilization submit the following to the Owner and/or Designer: SCDHEC license, AIHA AAR/PAT letter of proficiency, firm’s QA program, and equipment calibration certificates.

3. On a weekly basis submit air sample analysis, QA data (reference counts, recounts, and microscope calibration checks) and daily field notes to the Owner and/or Designer.

4. At the conclusion of the project submit a summary report of the air monitoring activities to the Owner and/or Designer no later than ten working days after completion of Work and prior to the final request for payment.

PART 2 - PRODUCTS

MANUFACTURER’S LITERATURE:

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents is being submitted for review.

Submit an electronic copy to Owner and/or Designer for their review and file.
PART 3 - EXECUTION

QUALITY ASSURANCE:

Coordination of Submittals

Carefully review all aspects of each item being submitted.

Verify that each item and its appropriate submittals conform in all respects with the specified requirements.

Certify, by affixing signature of Contractor's authorized representative to the corner of each submittal package, that this coordination has taken place.

IDENTIFICATION OF SUBMITTALS:

Number consecutively and clearly identify all submittals. Show identification information on at least the first page of each submittal and elsewhere as necessary for positive identification of submittal.

Accompany each submittal package with a letter of transmittal showing all information required for identification and checking.

GROUPING OF SUBMITTALS:

Group submittals into packages identified as "Pre-Job Submittals" and "Post-Job Submittals".

Partial submittals may be rejected for noncompliance with the Contract Documents.

TIMING OF SUBMITTALS:

Make submittals far enough in advance of scheduled dates for commencement, execution or installation to provide time required for review, for securing necessary approvals, for possible revisions and resubmittals and for placing orders and securing delivery.

The Owner and/or Designer will use his best efforts to review submittals within three days of receipt of submittals.

Contractor will be held responsible for delays occasioned by in-complete submittals packages.
OWNER/DESIGNER’S REVIEW:

Review by the Owner and/or Designer does not relieve the Contractor from responsibility for errors which may exist in the submitted data. The Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures involved in the execution of the Work.

Make revisions as required by the Owner and/or Designer and resubmit for approval.

END OF SECTION
SECTION 01410 - AIR MONITORING

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF THE WORK:

For this project, the Owner will select an Air Monitoring Firm. This section describes air monitoring carried out by the Air Monitoring Firm to verify that the outside environment remain uncontaminated. This section also sets forth airborne fiber levels outside the Work Area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA is the responsibility of the Contractor and is not covered in this section. Owner will not be performing air monitoring to meet these requirements. Owner’s third-party air monitor will not analyze air samples collected by Contractor.

AIR MONITORING QUALIFICATIONS:

The following is required of the onsite air monitor for this project:

A. Have a current SCDHEC license for air monitoring.

B. The onsite analyst shall be proficient in AIHA’s Asbestos Analysts Registry (AAR) program and submit evidence to the Owner. If samples are not analyzed onsite the Air Monitoring Firm’s laboratory shall be proficient in AIHA’s PAT program.

C. Submittal of firms Quality Assurance program to meet the requirements of NIOSH Method 7400, Asbestos and Other Fibers by PCM.

D. Submit current calibration certificates for air calibration devices used onsite.

E. Have at least 90 days of onsite experience monitoring asbestos abatement projects.
AIR MONITORING:

A. Work Area Isolation: A function of the Air Monitoring Firm will be to detect faults in the Work Area isolation such as:

   1. Failure of filtration or rupture in the local exhaust system,
   2. Contamination of the exterior of the building with airborne asbestos fibers.

B. Should any of the above occur, the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Designer.

C. Work Area Airborne Fiber Count: The Air Monitoring Firm will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne fiber counts which may significantly challenge the ability of the Work Area isolation procedures to protect the outside of the building from contamination by airborne fibers.

D. Work Area Clearance: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Air Monitoring Firm will sample and analyze air as specified other sections.

E. The Air Monitoring Firm will be conducting air monitoring during the course of the project and shall be physically onsite during active collection of samples to maintain sample integrity and provide work practice observations to the Owner and Designer.

ANALYTICAL METHODS:

All daily area air samples will be analyzed by phase contrast microscopy (PCM) using NIOSH, 7400 Method. Clearance samples for work areas applicable to SCDHEC R. 61-86.1 shall be analyzed by Transmission Electron Microscopy in accordance with 40 CFR 763.

SCHEDULING:

A. Testing by the Air Monitoring Firm shall be performed in areas and at times during the Work as deemed necessary by the Designer or as specified in the Contract Documents.

B. Unless otherwise approved by the Designer, Contractor shall schedule final testing at least twenty-four hours prior to desired time of testing. Notification shall be made to the Designer, Owner, and Air Monitoring Firm in writing.
C. Unless otherwise approved by the Designer, Contractor shall notify the Designer 72 hours prior to variations in the originally scheduled work hours, in order to receive approval from the Designer and Owner to arrange proper testing services.

D. Coordinate other scheduling with Designer as necessary.

RESULTS:

A. All testing and analysis will be performed promptly and results issued expeditiously in order to minimize any possible delay in the progress of the Work.

B. Test results will be available to Owner, Designer, and Contractor as follows:

1. Air sample results by Phase Contrast Microscopy: 24 hours from sample extraction time.

2. Air sample clearance results by Transmission Electron Microscopy: 24 hours from sample receipt at the laboratory.

3. Results of other tests deemed necessary by Designer: as quickly as possible but not later than three days following completion of test(s) and receipt of results.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

SCHEDULE OF AIR SAMPLES:

General: The number and volume of air samples will be in accordance with the following schedule:
Before Start of Work:

The Air Monitoring Firm will secure the following Air Samples to establish a baseline before start of Work.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analytical Method</th>
<th>Minimum Volume (L)</th>
<th>Flow Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within each Work Area &amp; adjacent to the work area</td>
<td>5</td>
<td>NIOSH 7400</td>
<td>1200</td>
<td>3.0-12.0</td>
</tr>
</tbody>
</table>

From start of Work through the project decontamination, the Air Monitoring Firm will conduct representative daily samples inside and outside each work area as described in SCDHEC R. 61-86.1. Each air exhaust from containments shall be measured daily.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analytical Method</th>
<th>Flow Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside &amp; Outside Each Work Area</td>
<td>4-6</td>
<td>NIOSH 7400</td>
<td>3.0-12.0</td>
</tr>
</tbody>
</table>

If airborne fiber counts exceed 0.1 f/cc in contained work areas, additional samples will be taken as necessary to monitor fiber levels.

If any air samples taken outside of the Work Area exceeds the 0.01 f/cc then Contractor will be required to immediately and automatically stop all Work and take remedial action. The Owner and Designer shall be notified immediately.

PERSONNEL MONITORING:

Contractor shall be responsible for OSHA air monitoring requirements. Contractor’s OSHA monitoring shall be analyzed by an independent laboratory. Owner’s third-party air monitor will not analyze air samples collected by Contractor. The contractor shall submit results of the monitoring to the Designer on a weekly basis.
FINAL INSPECTIONS AND CLEARANCE TESTING

See section 02081.

REPORTING

At the completion of the project, the air monitoring firm shall prepare a report describing the assessment of the project, all air monitoring data, acceptance letters, calibration records, quality assurance documentation referenced in NIOSH 7400, and a description of the project as it proceeded to completion and submit an electronic copy of the report to the Designer.

END OF SECTION
SECTION 01503 - TEMPORARY FACILITIES

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the Work.

PART 2 - PRODUCTS

MATERIALS AND EQUIPMENT:

General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only material and equipment that is recognized as being suitable for the intended use, and is in compliance with appropriate standards.

WATER SERVICE:

A. Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection.

B. Water Hoses: Employ hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each area and to each Decontamination Unit.

C. Hot Water: Hot water is not available from Owner. Contractor will provide necessary water heating equipment.

D. Relocate, modify and extend services and facilities as required during the course of Work so as to accommodate the entire Work of the project.
ELECTRICAL SERVICE:

A. General: Provide a weatherproof, grounded temporary power service and distribution system of sufficient size, capacity, and power characteristic to accommodate performance of Work during the construction period. An electrical ground fault circuit interrupter shall be utilized between the power source and the site of containment usage. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of Work. Contractor may use existing electrical service with permission from the Owner. If power is unavailable from Owner, Contractor shall provide power source.

B. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general, run wiring overhead and rise vertically where wiring will be least exposed to damage from construction operations.

SCAFFOLDING:

Provide scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of scaffolding shall comply with applicable OSHA provisions.

FIRE EXTINGUISHERS:

Fire Extinguisher: Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area. Provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

TEMPORARY STRUCTURES:

A. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Separate handwashing facilities shall also be provided.
PART 3 - EXECUTION

INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required. Installation shall be in compliance with manufactures instructions, OSHA, NFPA, and/or NEC.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of permanent facilities.

END OF SECTION
SECTION 01513 - EXHAUST VENTILATION SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PART 2 - PRODUCTS

EXHAUST MACHINES:

Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Use units that are manufactured and have appropriate UL and efficiency testing. Units that appear to be damaged shall be removed from service immediately. Units shall have a three stage filtration process; first-stage low efficiency for particles 100 µm and larger, second-stage filter for particles down to 5 µm, and the final stage filter (HEPA) capable of removing 99.99% particles at 0.3 µm or larger. Filters shall be new and seated properly within the units.

PART 3 - EXECUTION

GENERAL:

A static negative air pressure of at least -0.02 inches water column shall be maintained at all times in the Work Area enclosure to ensure that contaminated air does not enter non-contaminated areas. Contractor is responsible for all patent requirements related to exhaust and shall provide a continuously operating manometer with alarm to measure static pressure differential. The negative air pressure shall be monitored by an employee of the Contractor or their delegate to prevent loss of negative pressure. The Contractor shall record the manometer readings four times throughout the 8-hour work shift at a minimum. Submit readings as Specified in Section 1300, Submittals.
PREPARATION OF THE WORK AREA:

A. Determining the Ventilation Requirements: Provide fully operational local exhaust systems supplying a minimum of one air change every 15 minutes. Determine the volume in cubic feet of the Work Area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (cfm) for the Work Area by dividing this volume by the air change rate.

B. Ventilation Required (CFM) = Volume of Work Area (cu. ft.)/15 min. Determine Number of Units needed to achieve 15 minute change rate by dividing the ventilation requirement (CFM) above by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters in the machines labeled operating characteristics. Number of Units Needed = Ventilation Requirement (CFM)/ Capacity of Unit with Loaded Filters (CFM).

C. Add one additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

D. Location of Exhaust Units: Locate exhaust unit(s) so that makeup air enters Work Area primarily through decontamination facilities and traverses Work Area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a minimum distance from the worker access opening or other makeup air sources.

E. Place End of Unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape and caulk as required.

F. Vent Exhaust Units to the exterior away from occupied areas unless otherwise authorized in writing by the Designer.

USE OF THE LOCAL EXHAUST SYSTEM:

A. General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit, or voltage and amperage specified by the manufacturer.

B. Testing the System: Test local exhaust system before any asbestos-containing material is wetted or removed. After the Work Area has been prepared, the decontamination facility set up, and the exhaust unit(s) installed, start the unit(s) one at a time.

C. Demonstrate Operation of the local exhaust system to the Air Monitoring Firm and/or Designer including, but not be limited to, the following:

   a. Plastic barriers and sheeting move lightly in toward Work Area,
b. Curtain of decontamination units move lightly in toward Work Area,

c. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.

d. Use smoke tubes to demonstrate a positive motion of air across all areas in which Work is to be performed.

D. Start exhaust units before beginning Work (before any asbestos-containing material is disturbed). If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional support. After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the Work Area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop. Do not shut down local exhaust system during lockdown procedures, unless authorized by the Designer in writing.

E. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and all exhaust units are operating again. At completion of abatement work, allow exhaust units to run as specified under Section 02081, to remove airborne fibers that may have been generated during abatement work and cleanup and purge the Work Area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.

F. Perform shutdown dismantling of the local exhaust system in accordance with procedures outlined in Section 02081- Removal of Asbestos-Containing Materials.

END OF SECTION
SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

RELATED DOCUMENT:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other work place hazards except for respiratory.

RELATED WORK SPECIFIED ELSEWHERE:

Respiratory Protection is specified in Section 01562.

WORKER TRAINING:

Train, in accordance with 29 CFR 1926.1101, 40 CFR 763, and SCDHEC R. 61-86.1, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:

- Methods of recognizing asbestos.
- Health effects associated with asbestos.
- Relationship between smoking and asbestos in producing lung cancer.
- Nature of operations that could result in exposure to asbestos.
- Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
  -- Engineering controls
  -- Work practices
  -- Respirators
  -- Housekeeping procedures
Asbestos Abatement Plan
Palmetto Middle School ■ Piedmont, SC
March 6, 2019 ■ Section 01560

-- Hygiene facilities
-- Protective clothing
-- Decontamination procedures
-- Emergency procedures
-- Waste disposal procedures
-- Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
-- Appropriate work practices for the Work
-- Requirements of medical surveillance program
-- Review of 29 CFR 1926
-- Exhaust ventilation systems
-- Work practices including hands on or on-job training
-- Personal decontamination procedures
-- Air monitoring, personnel and area

MEDICAL SURVEILLANCE:

Provide a medical surveillance program and physician's opinion before a respirator is assigned as required by 29 CFR 1910.134 and 29 CFR 1926.103(e)(10). In addition, require that the physician provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

PART 2 - EQUIPMENT

PROTECTIVE CLOTHING:

A. Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.

B. Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers. Require hard hats to be worn at all times that Work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the Work. Thoroughly clean, decontaminate and bag hats before removing them from the Work Area at the end of the Work.

C. Footwear: Provide foot covers and footwear with non-skid soles, and where required by OSHA, foot protection for all workers. Do not allow this footwear to be removed from the Work Area for any reason other than disposal of contaminated waste or transfer to another asbestos Work Area.

D. Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Goggles will not be worn with full face respirators.
E. Gloves: Provide work gloves.

ADDITIONAL PROTECTIVE EQUIPMENT:

Disposable coveralls, head covers, and footwear covers, and PAPR respiratory protection shall be provided by the Contractor for the Owner, Designer, and other authorized representatives who may inspect the job site.

Provide all workers with appropriate tool tethers to prevent injury to workers below.

PART 3 - EXECUTION

GENERAL:

Contractor shall assume sole responsibility and provide worker protection as required by the most stringent OSHA standards applicable to the Work.

Each time the Work Area is entered, all workers shall wear a disposable whole body suit. The worker may wear this suit over their street cloths during non-friable removals.

DECONTAMINATION PROCEDURES:

Require all workers to adhere to the following personal decontamination procedures at a minimum whenever they leave the Work Area:

Regulated removals utilizing a full decontamination unit:

- When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.

- Still wearing respirators, proceed to showers. Showering is mandatory. Thoroughly wet body. Remove respirator and dispose of filter properly. Carefully wash respirator facepiece. Shower completely with soap and water. Rinse shower walls and floor prior to exit.

- Proceed from shower to changing room and change into street clothes or into new disposable work items.
WITHIN WORK AREA:

Workers MAY NOT eat, drink, smoke, apply cosmetics, chew gum or use tobacco products in the Work Area. To eat, chew, apply cosmetics, drink or smoke, workers shall follow the procedure described above, then dress in street clothes before entering the non-Work Areas of the building.

END OF SECTION
SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Instruct and train each worker involved in abatement in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place.

STANDARDS:

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.


- **NIOSH** - National Institute for Occupational Safety and Health.
PART 2 - PRODUCTS

Provide respirators and filters approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers.

PART 3 - EXECUTION

GENERAL:

Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. Furnish personnel engaged in the removal and demolition of asbestos materials with supplied air respirators (continuous flow or pressure demand class), or PAPR, until the TWA is established or a negative exposure assessment is furnished.

After the TWA is established, the Contractor shall furnish respirators as required. Respirators offer varying degrees of protection, generally determined by the type of respirator. The assigned protection factor (APF) indicates the expected degree of protection provided by the type of respirator. A respirator with a protection factor of 10 will provide protection to a properly fit the wearer in air concentrations up to 10 times the Permissible Exposure Limit (PEL).

Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

<table>
<thead>
<tr>
<th>Type of respirator</th>
<th>Quarter mask</th>
<th>Half mask</th>
<th>Full facepiece</th>
<th>Helmet/hood</th>
<th>Loose-fitting facepiece</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air-Purifying Respirator</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Powered Air-Purifying Respirator (PAPR)</td>
<td></td>
<td></td>
<td></td>
<td>25/1,000</td>
<td>25</td>
</tr>
<tr>
<td>3. Supplied-Air Respirator (SAR) or Airline Respirator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand mode</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous flow mode</td>
<td></td>
<td></td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Pressure-demand or other positive-pressure mode</td>
<td></td>
<td></td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for
use at lower concentrations of that substance, or when required respirator use is independent of concentration.

2 The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

3 This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

4 The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

5 These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Air Systems Monitor: Continuously monitor the air system operation including compressor operation, filter system operation, and all warning and monitoring devices at all times that system is in operation. Assign an individual trained in the operation and maintenance of the system to provide this monitoring.

END OF SECTION
SECTION 01563 - DECONTAMINATION UNITS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

SUBMITTALS:

Before Start of Work submit written description and/or sketch of Personnel and Equipment Decontamination Units as specified in Section 01300.

PART 2 - PRODUCTS

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mils thick, clear, or frosted.

B. Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mils thick, or frosted.

C. Duct Tape: Provide duct tape in 2 or 3 inch widths, with an adhesive specifically formulated to stick tenaciously to sheet polyethylene.

D. Shower Pan: Provide one piece waterproof shower pan.

E. Shower Walls: Provide walls fabricated from rigid, impervious, waterproof material. Structurally support as necessary for stability.

F. Shower Head and Controls: Provide a factory made shower head. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

G. Filters: Provide filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposal
dual filter elements with the primary filter allowing 20 microns and smaller and secondary to pass particles 5 microns and smaller

H. Shower Stall: For Wash Down Station, provide leak tight shower enclosure with integrated drain pan. Structurally support as necessary for stability.

I. Sump Pump: Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.

PART 3 - EXECUTION

GENERAL

PERSONNEL DECONTAMINATION UNIT

A. Provide a Personnel Decontamination Unit consisting of a serial arrangement of the following connected rooms or spaces: Changing Room, Airlock, Shower Room, Airlock, Equipment Room. An example illustration is provided below.
B. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100 foot candles.

C. Changing Room (Clean Room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing. Construct using polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building. Locate so that access to Work Area from Changing Room is through Shower Room. Separate Changing Room from the building by a sheet polyethylene flapped doorway.

1) Require workers to remove street clothes in this room, dress in clean disposable coveralls, and on respiratory protection equipment. Do not allow asbestos-contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked (or with a bathing suit as described in Section 01560) from the showers.

2) An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workmen may enter the Changing Room directly from the Shower Room. Protect all surfaces of room with sheet plastic. Authorization for this must be obtained from the Owner in writing prior to start of construction.

3) Maintain floor of Changing Room dry and clean at all times. Do not allow overflow water from shower to wet floor in the Changing Room.

4) Damp wipe all surfaces twice after each shift change with a disinfectant solution.

5) Provide a continuously adequate supply of disposable bath towels.

6) Provide posted information for all emergency phone numbers and procedures.

7) Provide one storage facility per employee.

D. Shower Room: Provide a completely water tight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area undressing in the Equipment Room.

E. Construct room by providing a shower pan and two shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.

1) Separate this room from the rest of the building with air tight walls fabricated of 6 mil polyethylene.

2) Separate this room from the Changing and Equipment Rooms with airlocks fabricated of 6 mil polyethylene, at least three feet wide. Two airlocks are required, one between the Shower and Equipment Room, and one between the Shower and Changing Room.

3) Provide splash-proof entrances to Changing and Equipment Rooms.
F. Provide shower head and controls.

G. Provide temporary extensions of existing hot and cold water and drainage as necessary for a complete and operable shower.

H. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.

I. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

J. Arrange shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area.

K. Provide flexible shower head.

L. Pump waste to drain or to storage for disposal. If pumped to drain, provide 20 micron and 5 micron waste water filters in line to drain or waste water storage. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan.

M. Provide Hose Bib.

N. Equipment Room (Contaminated Area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers. Separate this room from the Work Area by a curtained doorway consisting of three sheets of overlapping 6 mil polyethylene sheeting. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet on the top and left side. All sheets have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

O. Work Area: Separate Work Area from the Equipment Room by poly-ethylene barriers. If the airborne asbestos level in the Work Area is expected to be high, as in dry removal, add an intermediate cleaning space between the Equipment Room and the Work Area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6 mil polyethylene per shift change and remove contaminated layer after each shift.
P. Airlocks: Airlocks are small rooms in the decontamination area, at least 3 feet wide and three feet deep, separated from the rest of the Work Area by at least 6 mil polyethylene walls. Airlocks must be placed between the Equipment Room and the Shower and between the shower and the Change Room. Each has two doors (Z-flaps) and in no case shall each of these doors be opened at the same time.

Q. Construction:

1) Walls and Ceiling: Construct air tight walls and ceiling using two layers polyethylene sheeting, at least 4 mil in thickness. Attach to existing building components or a temporary framework.

2) Floors: Use two layers (minimum) of 6 mil polyethylene sheeting to cover floors in the Equipment, Shower (underneath shower pan), and Changing Rooms. Provide an additional layer in the Equipment Room for every shift change expected.

3) Roll one layer of plastic from Equipment Room into Work Area after each shift change. Provide a minimum of two layers of plastic at all times. Use only clear plastic to cover floors.

4) Doors: Fabricate from three overlapping sheets (Z-Flaps) with openings a minimum of three feet wide. Configure so that sheeting overlaps adjacent surfaces. Sheets shall close after being released. Put arrows on sheets to indicate direction of overlap and travel. Provide a minimum length of three feet between entrance and exit of any room or airlock.

5) If the decontamination area is located on the exterior of a facility or within an area requiring abatement over the unit, construct the decontamination unit(s) with a minimum 1/4" plywood or acceptable solid construction for all exterior surfaces.

6) Visual Barrier: Where the decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/3" thick hardboard or 1/4" plywood. Where the solid barrier is provided, sheeting need not be opaque.

R. Electrical: Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in Shower Room to a ground-fault circuit protection device.
ALTERNATE METHOD OF DECONTAMINATION

Alternate methods for decontamination may be submitted to the Designer and Owner for approval. Do not proceed with any such method(s) without prior written approval of the Designer and Owner.

DECONTAMINATION SEQUENCE

A. Entering Work Area:

1) Worker enters Changing Room and removes street clothing, puts on clean disposable coveralls and respirator, and passes through the Shower Room into the Equipment Room.
2) Any additional clothing and equipment left in Equipment Room needed by the worker in the area shall be put on in the Equipment Room.
3) Worker proceeds to Work Area.

B. Exiting Work Area:

1) Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment (or bathing suit). Extra work clothing may be stored in contaminated end of the Equipment Room. Disposable coveralls are placed in a bag for disposal with other material.
2) The worker then proceeds to the shower, still wearing the respirator, and, using soap, washes off completely, paying special attention to the hair.
3) The worker washes off the respirator in the shower, then pulls it from his face and washes the facepiece to face seal area of the face and the respirator.
4) The worker then washes his hair again.
5) After completion of the shower, the worker removes the wet filters and discards them as contaminated waste, and proceeds to the clean room.
6) The worker then dresses in his street clothes, properly cleans and stores his respirator and exits the decontamination unit. Decontamination procedures shall be followed by all individuals leaving the Work Area.

EQUIPMENT DECONTAMINATION (LOADOUT) UNITS

A. Provide an Equipment Decontamination Unit for work areas over 1000 square feet consisting of a serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

B. Wash Down Station: Provide an enclosed wash down unit located in Work Area just outside Wash Room as an equipment, bag, and container cleaning station.
C. Holding Room: Provide Holding Room as a drop location for tagged asbestos-containing materials passed from the Wash Room. Waste material and equipment will be rebagged here. Construct Holding Room of 2” x 4” wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room. Separate this room from the Wash Room with an airlock as described previously.

D. Clean Room: Provide Clean Room to isolate the Holding Room from the building exterior. Construct Clean Room of 2” x 4” wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and locate to provide access to the Holding Room from the building exterior. Separate this room from the exterior by a single flap of 6-mil polyethylene sheeting and from the Holding Room by a door as described previously.

E. Equipment or Material: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure:

1) At washdown station, thoroughly wet-clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.
2) When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit, other than the doorway between the Washdown Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.
3) Once inside the Wash Room, wet-clean the bags and/or equipment.
4) When cleaning is complete, pass items into Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room.
5) Workers from the building exterior enter Holding Area and rebag and remove decontaminated equipment and/or containers for disposal. Waste material may be drummed at this point.
6) Require these workers to wear full protective clothing and wear appropriate respiratory protection.
7) At no time is worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

CLEANING OF DECONTAMINATION UNITS

Clean debris and residue from inside of Decontamination Units on a daily basis. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.
Asbestos Abatement Plan
Palmetto Middle School ■ Piedmont, SC
March 6, 2019 ■ Section 01563

SIGNS

Post an approximately 20 inch by 14 inch manufactured sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101.

Legend

DANGER

ASBESTOS

MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONNEL ONLY

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

END OF SECTION
DIVISION 2

SITE WORK
SECTION 02081 - REMOVAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

RELATED WORK SPECIFIED ELSEWHERE:

Summary of Work is specified in Section 01013.
Disposal of asbestos containing waste is specified in Section 02084.
Exhaust Ventilation Systems is specified in Section 01513.
Decontamination Units is specified in Section 1563.

WORK INCLUDED:

General: The Contractor will perform gross removal of asbestos containing materials. Refer to Section 01013 for the summary of Work required under this section.

SUBMITTALS:

Refer to Section 01300 for information on Submittals required under this section.

PART 2 - PRODUCTS:

A. Contractor must furnish all labor, materials, equipment, and subcontractors necessary for removal and disposal of ACM in a manner consistent with these specifications. These materials include but are not limited to:

1) Polyethylene sheeting (6 mil minimum thicknesses for critical and flooring use).

2) Staples, nails, spray cement, and tape capable of sealing joints and securing polyethylene to all necessary surfaces.

3) Surfactant mixed in recommended proportions.

4) Containers to receive and retain ACM with appropriate labels.

5) Warning signs and labels.

6) Glove bags specifically designed for its application.
7) Encapsulants / Lockdown.

8) Other Materials: All necessary materials for removal and disposal of asbestos in compliance with all applicable codes and regulations, and these specifications.

B. Deliver all materials in the original packages or containers bearing the name of the manufacturer and the brand name.

C. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorated materials shall not be used and must be removed from the job site. Materials that become contaminated with asbestos must be disposed of in accordance with the applicable regulations.

TOOLS AND EQUIPMENT

A. Provide suitable tools for asbestos removal, including but not limited to scrapers, brushes, razor knives, wrenches, tools for constructing containment and decontamination units, brooms, carts, and safety equipment.

B. Provide suitable air moving and exhaust equipment, including but not limited to:

1) A method for maintaining pressure differential of -0.02 inches of water column inside containment than outside. Refer to Section 01513 for requirements of Local Exhaust System Equipment.

2) HEPA-filtered vacuums.

3) Recording manometers for monitoring the pressure inside containment relative to outside.

C. No equipment shall cause suspension of ACM within work area or discharge of asbestos fibers outside of work area.

D. Transportation: As required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property.
PART 3 - EXECUTION

PREPARATION:

GENERAL - WORK AREAS

A. Work Area: Is the location where asbestos-abatement work occurs. It is a variable of the extent of Work of the contract. For this project a "Work Area" is defined as the area in which asbestos removal is being performed. A "Work Area" is considered contaminated during the Work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-abatement work.

B. Work Practice Variances. Any work practice variance must be approved by the Designer. If the variance request involves work practices which conflict state regulations, the variance must also be approved by the applicable state agency.

C. Critical barriers: All asbestos abatement work involving friable and non-friable ACM shall require the installation of critical barriers at all penetrations to the work area.

D. HVAC and Electrical Shut Down: HVAC systems serving the work area must be either shut down or temporarily capped on all asbestos abatement projects. Electrical systems serving the work area shall be shut down and secured, or special provisions with Owner must be made to ensure the safety of abatement workers while asbestos abatement is performed. All electrical equipment used by Contractor in the work area must be protected by GFI circuits.

E. Pre-Cleaning: When Consultant has determined that friable or damaged ACM have contaminated or potentially contaminated equipment and surfaces in the work area, Contractor must HEPA vacuum and wet-wipe these items before application of protective coating.

F. Polyethylene Sheeting: In general, all fixed objects and architectural surfaces in the work area must be protected from contamination during asbestos removal, or from damage during abatement. Polyethylene sheeting shall be flame retardant when used in areas of hot work.

G. Should the area beyond the Work Area(s) become contaminated with asbestos containing dust or debris as a consequence of the Work, immediately notify Designer, stop all abatement work and clean those areas in accordance regulations and approved procedures. Perform all such required cleaning or decontamination at no additional cost to Owner.
H. Asbestos Abatement Work Will Not Commence Until:

1) Arrangements have been made for disposal of waste at an acceptable site.

2) Appropriate waste containers are onsite.

3) Work Areas and decontamination enclosure systems and parts of the building required to remain in use are effectively segregated.

4) Tools, equipment and material waste receptors are on hand.

5) Proper notification has been made to the appropriate regulatory agency.

6) All other preparatory steps have been taken and applicable notices posted and permits obtained.

7) All worker training has been completed.

8) Work area has been observed by the Owner’s Representative and/or Designer.

WORK AREA PREPARATION

A. WORK AREA PREPARATION FOR FULL CONTAINMENT

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.

2) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

3) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

4) Clean movable objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and remove such objects from work area to a suitable temporary location.
5) Clean fixed objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and enclosed objects with 6 mil polyethylene sheeting and tape.

6) Clean proposed work areas using HEPA-filtered vacuums and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters must not be used.

7) The Contractor shall thoroughly seal the work area for the duration of the work by completely sealing off all openings and fixtures in the work area, including, but not limited to, heating and ventilation ducts, doorways, corridors, windows, skylights, and lighting, with plastic sheeting taped securely in place. If the Contractor is using sealant materials to fill in small holes or cracks, the material shall have appropriate fire ratings. When isolating the work area along halls, corridors, etc., provide solid plywood barriers with joints sealed and two layers of 6-mil polyethylene on both sides. Entrances and exits from the work area will have air locks and triple barriers of plastic sheeting so that the work area is always closed off by one barrier when workers enter or exit.

8) All wall and flooring surfaces in the work area shall be covered with “true virgin poly” plastic sheeting taped securely in place to protect from water damage (or damage by sealants). Alternatively, “shrink wrap” may be used to create outer containments. Two layers of 6 mil plastic sheeting are required on the floor. No water may be left standing in the floor at the end of the work day. Any costs associated with water damage or damage caused by securing plastic sheeting to areas inside or outside the abatement area shall be the Contractor’s responsibility. Areas in which hot work is performed as part of the abatement, flame resistant polyethylene shall be used. Integrity of these seals shall be regularly checked and maintained by the Contractor.

9) Viewing windows (minimum 24”x24” of Plexiglas construction) shall be installed in multiple locations around the containment where feasible or as directed by the Owner, Designer, or Air Monitoring Firm. Locations shall be selected to provide line of sight to all abatement actions.

10) The Contractor shall set up a work area, loadout area and decontamination area as specified in section 01563. The decontamination facility outside of the work area shall consist of a change room, shower room, and equipment room with airlocks between each room. Any alterations to the designed decontamination facility shall be approved by the Designer.
11) The Contractor shall establish and mark emergency and fire exits from the work area. Emergency procedures shall have priority over established decontamination entry and exit procedures. Install portable fire extinguishers in compliance with National Fire Protection Association, Standard No. 10, portable extinguishers. A minimum of one (1) ABC dry chemical rated fire extinguisher shall be in the clean room plus one for every 3000 square feet in the work area. Areas involving hot work shall have additional fire extinguishers and a fire watch.

12) A system of HEPA-equipped air filtration devices shall be configured so that a pressure differential is established between the work area and the surrounding area (-0.02” to -0.04” water column) as required in Section 1513. Tests will be made and documented daily to confirm this condition. Additional air filtration devices are provided inside the work space so that the air is changed every 15 minutes. The total air exchange is the exhaust air plus the re-circulated air. **A HEPA-equipped air filtration device shall be considered to exhaust 75% of its rated capacity unless the Contractor shows actual test data, no more than 24 hours old, that shows a higher rate, but no higher than the rated exhaust.** The pressure differential is maintained at all times after preparation is complete and until the final visual inspection and air tests confirm the area is clean and acceptable for occupancy.

Air shall be exhausted outside the building. Any variations must be approved by the Designer. The exhaust system will be monitored by the Air Monitoring Firm for leaks. The Contractor shall check daily for leaks and log his checks in the bound log book. This includes checks internal to air moving devices.

High Efficiency Particulate Air (HEPA) filter exhaust systems equipped with new HEPA filters shall be used. Verify filters are seated properly and prevent any air by-pass. Exhaust equipment and systems shall comply with ANSI Z9.2-79 and used according to manufacturer’s recommendations.

B. ASBESTOS WORK AREA PREPARATION (NON-FRIABLE MATERIALS & GLOVEBAGS)

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.
2) Contractor shall establish an equipment room or area that is adjacent to the work area for the decontamination of workers and equipment contaminated with asbestos. The decontamination area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface, and be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area when acceptable by OSHA asbestos regulations.

3) Seal off all openings with critical barriers for interior removals. Critical barriers must be placed on penetrations that include but are not limited to; heating and ventilation ducts, doorways, corridors, and windows, with plastic sheeting taped securely in place.

4) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

5) Clean and cover fixed surfaces in the proposed work area with polyethylene sheeting.

6) Provide polyethylene sheeting under materials to be removed. For roofing work, provide polyethylene sheeting at areas around collection bins to prevent soil contamination.

7) Install HEPA-filtered exhaust units in work area for interior removals. A pressure differential is not required.

8) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

9) Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to the fire code.
ASBESTOS REMOVAL

A. METHOD OF REMOVAL GROSS REMOVAL WITHIN FULL CONTAINMENT

1) Prior to asbestos removal, the Contractor’s equipment, work area and decontamination units will be inspected and approved by the Air Monitoring Firm.

2) The asbestos material shall be sprayed with water containing an appropriate wetting agent (amended water) to enhance penetration. The wetting agent shall be in a concentration recommended by the manufacturer. A fine spray/mist of the amended water shall be applied to reduce fiber release before and during removal of the asbestos material. The material shall be sufficiently saturated to meet the NESHAP requirements referenced in these specifications and to prevent emission of airborne asbestos fibers in excess of the exposure limits prescribed in the OSHA 29 CFR 1926.1101 Standard referenced in these specifications.

3) The asbestos material shall be removed in small sections by two-man teams, on staging platforms when necessary. There shall be a separate water source for each asbestos team in the work area. Before beginning the next section, the material shall be packed while still wet into sealable plastic bags (6-mil minimum) and placed into suitable containers for transport. Bags and containers shall be marked with labels prescribed by the OSHA and NESHAP regulations referenced in these specifications. All material shall be double bagged and the outside bag and container shall be clean before leaving the loadout area.

4) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

5) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Each bag shall be individually sealed and placed in containers, at a minimum, a second bag, suitable for transport to the landfill.

6) All material shall be double bagged, and the outside bag and container shall be clean before leaving the loadout area. Bagged waste shall not accumulate in the work area. Contaminated materials, such as carpet, construction debris, pipe, gridwork, etc., may be wrapped in at least two (2) layers of plastic properly labeled and properly protected from perforations of the plastic (i.e., cardboard, multiple layers of plastic, etc.) as an alternative to using plastic bags. The bags and containers shall be marked with the OSHA label prescribed by the OSHA 29 CFR 1926.1101 Standard referenced in these specifications. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the
waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

7) All excess water (except shower water) shall be either combined with removed material or other absorptive material and properly disposed of as per EPA regulations, or filtered, using a 5-micron final filter, and disposed in the sanitary sewage system. Contractor shall not place water in storm drains, onto lawns, or into ditches, creeks, streams, rivers or other areas.

B. ASBESTOS REMOVAL (NON-FRIABLE MATERIALS)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Wet nonfriable material with amended water and remove with appropriate equipment. Spray the asbestos material during the removal to maintain a wet condition and minimize asbestos fiber dispersion. The asbestos material shall be removed by means which do not render the material friable or prevent dust from being released during the removal. Do not subject the material to grinding, sanding, chipping or abrading. If the material should become friable, stop work and notify the designer.

3) Remove material in small sections. As it is removed place material in sealable 6 mil polyethylene bags or equivalent and place in appropriately labeled container for transport. Dispose of as specified in Section 02084.

C. ASBESTOS REMOVAL (NON-FRIABLE FLOOR TILE & MASTIC)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Remove binding strips or other restrictive molding from doorways, walls, etc. Clean and dispose of as non-asbestos waste.

3) The asbestos floor tile shall be removed with an infrared heat machine. Torches or open flame devices are prohibited.

4) The asbestos material shall be removed intact by heating the floor tile until it becomes soft and releases from the substrate. Gently pry the tile up without breaking the tile. When the tile is cool, place material in approved containers. Bags and containers shall be marked with labels prescribed by the OSHA and
NESHAP regulations referenced in these specifications. Dispose of as specified elsewhere.

5) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

6) Remove mastic residue using approved mastic removal solvents. Use solvents in accordance with manufacturers’ instructions. Provide worker protection as required by safety data sheet (SDS) for any material used. Ensure solvent does not interfere with adherence with new flooring materials.

7) Mop floor with removal solvent as required by manufacturer’s directions as required to completely remove all residue of mastic. No buffing machines shall be used.

8) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Dispose of as specified in Section 02084.

D. ASBESTOS REMOVAL (GLOVE BAG)

1) Prior to asbestos removal, the Contractors equipment, work area and decontamination units will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Install glove bag according to manufacturer’s recommendations, and in accordance with 29 CFR 1926.1101.

3) If pipe is removed with ACM in place, wet material with amended water and wrap pipe with two separate layers of 6 mil polyethylene. Install glove bag(s) in location(s) where pipe is to be cut and removed ACM. Seal exposed ends prior to cutting.

4) Remove ACM in small sections. Lower the insulation carefully in the bottom of the glove bag. Do not drop material. One glove bag must be used for each section of ACM to be removed. Sliding or re-use of a single glove bag is prohibited. Use appropriately sized bag for the dimensions of the material to be removed.

5) Prior to removal of the glove bag, ensure that all surfaces from which asbestos has been removed are clean of all visible material, and that the upper portion of the bag is clean of all visible waste. Spray all surfaces and tools in the glove bag with amended water. Wipe all sections of pipe with rag or appropriate material.
6) Use appropriate encapsulant on all surfaces inside the bag. Cover exposed insulation remaining on pipe with wettable fiberglass or other suitable material. Duct tape is not suitable.

7) Place tools inside sleeves of glove bag and isolate from interior of glove bag. Collapse bag using HEPA-filtered vacuum. Squeeze and twist bag at mid-level to isolate waste from upper portion of bag. Seal bag with duct tape. Vacuum the unsealed upper portion. Cut the glove bag along the top and sides, then remove from pipe. Cut off isolated sleeves containing any tools or supplies from the bag and place in bucket of water. Clean the tools in equipment room of decontamination area.

8) Place bag in appropriately labeled container for transport. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

9) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum).

E. ASBESTOS REMOVAL (ROOFING)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Install critical barriers over all openings into building, adjacent buildings, or equipment within 30 feet of the work

3) Do not sand, abrade or grind roofing materials. Carry out all roofing removal in a manner that will minimize pulverizing, breaking or abrading of involved materials.
4) Use Manual methods which do not render roofing material "non-intact." These include the use of spud, spade, flat-blade or slicing tools, such as axes, mattocks, pry bars, spud bars, crow bars, shovels, flat-blade knives, and utility knifes, to slice, cut, strip-off, shear-under, or pry up the material.

5) Use wet methods during removal, unless wet methods are not feasible or will create safety hazards.

6) Do not drop or throw ACM that has been removed from a roof to the ground. Either carry or pass the ACM to the ground by hand, or lower it to the ground via covered, dust-tight chute, crane or hoist.

7) Upon being lowered transfer unwrapped material to a closed receptacle in such manner so as to preclude the dispersion of dust. Dispose of as specified in Section 02084.

INSPECTIONS OF THE WORK AREA DURING ABATEMENT

A. The Air Monitoring Firm/Air Monitor must carry out inspections during the project to confirm that the means and methods of abatement conform to specified procedures. On a large asbestos abatement project, it is likely that work will proceed in phases through several areas. Consider each location isolated from another as an independent area, and inspect it as work is completed. Visual inspection activities must keep pace with the work progress and sequence so that the work in one area does not risk contaminating areas still undergoing preparation, or areas that have already been cleaned, inspected, and released. The following is required at a minimum:

   a. Barriers of plastic sheeting, plywood, or equivalent materials should isolate the regulated areas, and should be left in place and intact throughout the work period. Closely inspect tears in the plastic floor covering prior to their being mended to see if any debris or water has leaked through to the surface below, particularly if carpeting is underneath. The integrity of the decontamination areas for personnel and equipment must be maintained throughout the work. Document inspections in the daily field notes and submit to the Designer weekly.

   b. Visually observe the removed material and contaminated water must not be allowed to accumulate inside the regulated area, but must be bagged or otherwise collected in water-tight containers as soon as practicable. Monitor the perimeter of the regulated area from inside and outside the isolation barriers. If the duct tape sealing the plastic sheeting is allowed to become wet, it may loosen and allow contaminated water and debris to run under the barriers to areas outside the regulated area. Similarly, the decontamination area must be kept strictly clean of any visible dust or debris. Document inspections in the daily field notes and submit to the Designer weekly.
c. Negative pressure ventilation devices should be in continual operations in a regulated area throughout the period of abatement work. Record the readings on negative pressure monitoring devices on a regular or continuous basis for comparison to the required pressure differential. Readings shall be collected at a minimum of four times during every eight-hour work shift. For work shifts exceeding eight hours, readings shall be collected every two hours. Document inspections in the daily field notes and submit to the Designer weekly.

d. Visually observe the containerized waste is properly labeled, is in good condition, and is not leaking. Additionally, observe the waste container is locked at all times unless actively loading.

B. The Abatement Contractor shall also conduct routine inspections of the work area. At a minimum the above inspections listed above, independent of the Air Monitor shall be conducted. Document inspections in the daily field notes and submit to the Designer weekly.

FINAL INSPECTIONS AND CLEARANCE TESTING

A. The final visual inspection shall be performed in general accordance with ASTM E1368-14, Section 8.4, Inspection at the Conclusion of the Project. If the Air Monitoring Firm or Designer finds visible accumulations of asbestos debris in the work area after the abatement, Contractor shall repeat wet-cleaning until work area is in compliance, at Contractor’s expense. All repeat visual inspections and air monitoring will be conducted only after all surfaces are dry. This shall be at the Contractor’s expense. Clearance monitoring shall not commence until the work area is clean and dry.

B. When an inspection by the Air Monitoring Firm or Designer in the presence of Contractor determines that the area is free of accumulations of dust and visible debris, a tinted lockdown encapsulant may be applied prior to final air testing. Section 09805 outlines additional details.

C. Only critical barriers and negative air exhaust units shall remain in the work area prior to initiating final clearance. The Air Monitoring Firm will, for this project, test final air quality clearance utilizing aggressive (for contained areas) or static methods (for glovebag removals) coupled with TEM analysis, upon notice and confirmation from Contractor that Work Areas and all other decontaminated and cleaned areas are ready. Sampling shall not begin until no visible water remains in work area. Sufficient time shall be allowed by the contractor for surfaces to dry. A minimum of 5 samples in each work area are required. Each sample shall have a minimum volume of 1,200 L of air. A clearance criterion of less than seventy (70) structures per millimeter squared (s/mm²) is required for TEM analysis.
D. Reclean at Contractor's expense all areas which do not comply with the standard of cleaning for final clearance. Continue cleaning until the specified final air quality clearance level is achieved. Contractor shall bear cost of all follow-up test(s) and air monitoring necessary during subsequent cleaning necessitated by the failure of the air tests to meet the specified final clearance level. Owner will deduct the cost of such follow-up test(s) and air monitoring from whatever monies remain due to the Contractor.

E. Following acceptance of clearance level test results and after Testing Laboratory determines Work Area(s) to be visually decontaminated, the Contractor shall dismantle decontamination enclosure systems and thoroughly wet clean immediate areas. The Contractor shall dispose of debris, used cleaning materials, unsalvageable materials used for sturdy barriers, and any other remaining materials. Consider the materials as contaminated and dispose of as specified in Section 02084.

SITEWORK COMPLETION

Asbestos abatement work is complete upon meeting the Work Area clearance criteria and fulfilling the following:

A. Remove all equipment, materials, debris from the Work site.

B. Remove all residue from adhesives used. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor.

C. Dispose of all asbestos containing waste material as specified in Section 02084.

END OF SECTION
SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

DISPOSAL:

Asbestos-containing waste material and debris which is packaged in accordance with the provisions of this specification may be disposed of at designated sanitary landfills when certain precautions are taken.

Notice and Permit from Appropriate State and/or Local Agencies.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

GENERAL:

Remove sealed and labeled containers of contaminated material and wastes and dispose of accordingly in approved landfill as follows:

A. Notify Owner and/or Designer not less than 48 hours, prior to the proposed time of removing and delivery of contaminated waste to the landfill. The Owner and/or Designer may elect to observe this operation and provide photo documentation.

B. All containers (bags, drums, wrapped components) are labeled so that labels have the appearance of or are designed in accordance with OSHA 29 CFR 1926.1101, August 10, 1994, as amended, and any subsequent amendments and editions, and EPA 40 CFR 61.150, November 20, 1990, as amended, and any subsequent amendments and editions.

C. Containers shall be non-porous. The use of “Gaylord” type cardboard containers is not permitted to transport regulated waste on this project.

D. Asbestos waste must be transported and disposed of in a manner that will not permit the release of asbestos fibers into the air.
E. The cargo area of the transport vehicle shall be free of debris and lined with 6-mil polyethylene sheeting. Floor sheeting shall be installed first and shall extend up the side walls at least 12 inches and shall be taped securely into place. Wall sheeting shall overlap by at least six inches and be taped into place. Ceiling sheeting shall extend down the side of the walls at least six inches and be taped into place.

F. If asbestos waste is transported exclusively in leak-tight clean drums, then polyethylene sheeting is not required.

G. Drums, bags and wrapped components that have been removed from the work area shall be loaded into an appropriate vehicle for transportation.

H. Any debris or residue observed on containers or surfaces outside of the work area resulting from abatement activities shall immediately be cleaned using wet methods and vacuum equipment with a HEPA filter.

I. Containers shall be carefully placed and not thrown into the truck cargo area. Drums shall be placed on a level surface in the cargo area and packed tightly or blocked and braced to prevent shifting and tipping. Large structural components shall be secured to prevent shifting.

J. Asbestos waste shall be transported directly to an approved landfill and shall not be stored at a location other than the abatement site.

K. Metal dumpsters or containers in which asbestos waste is temporarily stored at the abatement site shall be lined with 6-mil polyethylene sheeting to prevent contamination, and shall have doors and tops. The doors and tops shall be closed and locked except during loading or unloading asbestos waste.

L. Metal dumpsters or containers used for waste storage shall be labeled in accordance with OSHA 29 CFR 1926.1101, August 10. 1994 as amended, and any subsequent amendments and editions.

M. Bags shall be free of splits, rips and tears, and shall be carefully placed, not thrown, into the transport vehicle.

N. The vehicle used to transport asbestos wastes shall be labeled in accordance with 40 CFR 61.149(d)(1)(i,ii,and iii) as amended, and any subsequent amendments and editions.

O. Upon reaching the landfill, vehicles shall approach the dump location as closely as possible to unload asbestos waste.
P. Bags, drums and wrapped components shall be inspected when unloaded at the disposal site. Material in damaged containers shall be rewrapped, or shall be repacked in empty drums or bags.

Q. Waste containers shall be placed on the ground at the disposal site, not dropped or thrown out.

R. Following the removal of all containerized waste, polyethylene sheeting shall be removed and discarded in bags or drums along with contaminated cleaning materials and protective clothing.

S. After the asbestos waste has been unloaded, the truck cargo area, including the floor, walls and ceiling, shall be decontaminated using wet methods or a vacuum equipped with a HEPA filter until no visible residues remain.

T. A waste shipment record shall be used and shall include the names of the facility owner, contractor and disposal site, the estimated quantity of asbestos waste, and the type and number of containers used. Each time the material changes custody, the record shall be signed by the persons receiving the waste. If a separate hauler is used, the hauler’s name, address, telephone number and the driver’s signature shall also appear on the record.

U. Commercial rental vehicles shall not be used to transport any asbestos, asbestos-containing, or asbestos-containing waste.

END OF SECTION
SECTION 09805 – LOCKDOWN PROCEDURES

PART 1 - GENERAL

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

The Work includes lockdown encapsulation of substrates during decontamination procedures as outlined in Section 02081. Contractor must spot test and ensure encapsulant compatibility with future finishes such as paint, wall paper, etc. on all building substrates.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including label analysis and application instructions for each material proposed for use.

Installation Instructions: Submit manufacturer's installation instruction with specific project requirements noted.

Performance Warrantee: Submit manufacturer's performance guarantee.

Certification: Submit written approval of entity installing the encapsulant from encapsulant manufacturer.

Safety Data Sheet: Submit the Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant and encapsulating material proposed for use on the Work. Include a separate attachment for each sheet INDICATING the specific worker protective equipment proposed for use with the material indicated.

DELIVERY AND STORAGE: Deliver materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

- Name or title of material
- Manufacturer's stock number and date of manufacture
- Manufacturer's name
- Thinning instructions
- Application instructions

Deliver materials together with a copy of the Safety Data Sheet for the material.
JOB CONDITIONS: Apply encapsulating materials only when environmental conditions in the Work Area are as required by the manufacturer's instructions and compatibility with planned paint finished are assured.

PART 2 - PRODUCTS

Encapsulants: Provide lockdown type encapsulants specifically designed for binding and adhesion of trace asbestos contamination after asbestos removal. The lockdown type encapsulant shall be tinted with a contrasting color to the work area to verify coverage.

Fire Safety: Use only materials that have a flame spread index of less than twenty-five, when dry, when tested in accordance with ASTM E-84.

PART 3 - EXECUTION:

GENERAL:

Prior to applying any encapsulating material, ensure that application of the sealer will not cause the base material to fail and allow the sealed material to fall of its own weight or separate from the substrate. Should Contractor doubt the ability of the substrate to support the sealant, request direction from the Engineer before proceeding with the encapsulating work.

Do Not Commence Application of encapsulating materials until all removal Work within the Work Area has been completed, and the Engineer has completed a visual inspection unless otherwise specified in this document.

WORKER PROTECTION:

Before beginning Work with any material for which a Safety Data sheet has been submitted, provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

In addition to protective breathing equipment required by OSHA requirements or by this specification, use combination organic vapor - HEPA filters when organic solvent based encapsulants are in use.

Apply lockdown encapsulant to the substrates after all asbestos containing material has been removed and the Work Area has undergone final cleaning and final inspections as specified in Section 02081, accordingly.

Apply encapsulant with an airless spray gun with air pressure and nozzle orifice as recommended by the encapsulant manufacturer.

Apply second coat over first coat in strict conformance with manufacturer's instructions.
SEALING EXPOSED EDGES:

Seal edges of asbestos containing material exposed by removals up to an inaccessible spot such as a sleeve, wall penetration, etc. with two coats of encapsulant.

Prior to sealing, permit the exposed edges to dry completely to permit penetration of the sealer.

END OF SECTION
## TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

PALMETTO MIDDLE SCHOOL
WILLIAMSTON, SOUTH CAROLINA
TERRACON PROJECT NO. 86197015

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Analysis Method</th>
<th>Analytical Results</th>
<th>Suspect Material Description</th>
<th>Location</th>
<th>Homogeneous Area</th>
<th>Classification</th>
<th>Friable / Non-Friable</th>
<th>Current Condition</th>
<th>Estimated Quantity</th>
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### TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

PALMETTO MIDDLE SCHOOL
WILLIAMSTON, SOUTH CAROLINA
TERRACON PROJECT NO. 86197015

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<th>Current Condition</th>
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### TABLE 1
ASBESTOS RESULTS SAMPLE SUMMARY

PALMETTO MIDDLE SCHOOL
WILLIAMSTON, SOUTH CAROLINA
TERRACON PROJECT NO. 86197015

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<th>Analytical Results</th>
<th>Suspect Material Description</th>
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<th>Classification</th>
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<th>Current Condition</th>
<th>Estimated Quantity</th>
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Notes:
1) Quantities listed above are estimates to be used for inspection purposes only and should be field-verified for all other uses.

NA - Not Analyzed
NAD - No Asbestos Detected
PLM - Polarized Light Microscopy
TEM - Transmission Electron Microscopy
PACM - Presumed Asbestos Containing Material

SF - square feet
LF - linear feet
CF - cubic feet
### Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos % Type</th>
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<td>40%</td>
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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

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<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos % Type</th>
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<td>Cellulose</td>
<td>Perlite</td>
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Initial report from: 02/27/2019 08:36:14
# Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

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<td>% Non-Fibrous</td>
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<td>Hallway Window-WGC</td>
<td>White Non-Fibrous 20% Ca Carbonate</td>
<td>None Detected</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Homogeneous</td>
<td>80% Non-fibrous (Other)</td>
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</tr>
<tr>
<td>PMS-K-1</td>
<td>Tan Carpet Mastic</td>
<td>Tan Non-Fibrous 5% Ca Carbonate</td>
<td>None Detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Homogeneous</td>
<td>95% Non-fibrous (Other)</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>PMS-K-2</td>
<td>Tan Carpet Mastic</td>
<td>Tan Non-Fibrous 5% Ca Carbonate</td>
<td>None Detected</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>Homogeneous</td>
<td>95% Non-fibrous (Other)</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Analysis:**

**Analysis by:** EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312

**Initial report from:** 02/27/2019 08:36:14

---

**Analyst(s):**

Matthew McDonald (17)
Sarah Breneman (21)

---

**Lee Plumley, Laboratory Manager or Other Approved Signatory**

---

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312
# Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Appearance</th>
<th>% Matrix Material</th>
<th>% Non-Asbestos Fibers</th>
<th>Asbestos Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMS-A-1</td>
<td>Block Wall Filler</td>
<td>White/Blue</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-A-5</td>
<td>Block Wall Filler</td>
<td>Tan</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-B-3-Tan Mastic</td>
<td>Base Cove Mastic</td>
<td>Tan</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-B-3-Black Mastic</td>
<td>Base Cove Mastic</td>
<td>Positive Stop (Not Analyzed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PMS-C-3</td>
<td>Interior Door Caulk</td>
<td>White</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-G-3</td>
<td>White Mastic</td>
<td>White</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-J-3</td>
<td>Hallway Windows- WGC</td>
<td>White</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>PMS-K-3</td>
<td>Tan Carpet Mastic</td>
<td>Tan</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
</tbody>
</table>

**Analyst(s)**

Aaron Hartley (6)

Lee Plumley, Laboratory Manager or other approved signatory

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc, Pineville, NC

Initial report from: 02/27/2019 08:36:12
**Asbestos Bulk Building Material**

**Chain of Custody**

**EMSL Order Number** (Lab Use Only): 41901684

**Company**: Terracon Consultants, Inc.

**Street**: 72 Pointe Circle

**City**: Greenville  
**State/Province**: SC  
**Zip/Postal Code**: 29615  
**Country**: US

**Report To (Name)**: Jeffrey Gurrie

**Email Address**: jagurrie@terracon.com

**Project Name/Number**: 8697015

**U.S. State Samples Taken**: SC

**Telephone**: 864-292-2901

**Fax**: 864-292-6361

**Purchase Order**: 

**TAT Options**
- [ ] 3 Hour
- [ ] 6 Hour
- [x] 24 Hour
- [ ] 48 Hour
- [ ] 96 Hour
- [ ] 1 Week
- [ ] 2 Week

**PLM - Bulk (reporting limit)**

- [x] PLM EPA 600/R-93/116 (<1%)
- [ ] PLM EPA NOB (<1%)
- [ ] Point Count (<0.25%)  
- [ ] 1000 (<0.1%)
- [ ] Point Count w/Gravimetric (<0.25%)  
- [ ] 1000 (<0.1%)
- [ ] NIOSH 9002 (<1%)  
- [ ] NY ELAP Method 198.1 (traceable in NY)
- [ ] NY ELAP Method 198.6 NOB (non-traceable in NY)
- [ ] OSHA ID-191 Modified
- [ ] Standard Addition Method

**TEM - Bulk**

- [ ] TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
- [ ] NY ELAP Method 198.4 (TEM)
- [ ] Chatfield Protocol (semi-quantitative)
- [ ] TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
- [ ] TEM Qualitative via Filtration Prep Technique
- [ ] TEM Qualitative via Drop Mount Prep Technique
- [ ] Other

**Check For Positive Stop – Clearly Identify Homogenous Group**

**Date Sampled**: 2/9/19

<table>
<thead>
<tr>
<th>Sample #</th>
<th>HA #</th>
<th>Sample Location</th>
<th>Material Description</th>
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<tbody>
<tr>
<td>Pms- A-1</td>
<td>1</td>
<td></td>
<td>* TEM Black Wax Finish</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>3</td>
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<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td>* TEM</td>
</tr>
<tr>
<td>Pms- B-1</td>
<td>2</td>
<td>(asbestos mastic only)</td>
<td>Boaess CaC mastic</td>
</tr>
<tr>
<td></td>
<td>3</td>
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**Client Sample # (s):**

**Total # of Samples:**

**Received (Lab):**

- **Date**: 2/2/19
- **Time**: 0900 FY

**Comments/Special Instructions:**

* TEM upon receipt

---

Page 1 of 3 pages

4787 39901647
## Asbestos Bulk Building Material
### Chain of Custody

**EMSL Order Number (Lab Use Only):**

<table>
<thead>
<tr>
<th>Sample #</th>
<th>HA #</th>
<th>Sample Location</th>
<th>Material Description</th>
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<tbody>
<tr>
<td>PMS-C-1</td>
<td></td>
<td>Interior Door Caulk</td>
<td>Interior Door Caulk</td>
</tr>
<tr>
<td>2</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>* Ten</td>
<td></td>
</tr>
<tr>
<td>PMS-D-1</td>
<td></td>
<td></td>
<td>TS1</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>PMS-E-1</td>
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<td></td>
<td>2x4 Chip Pattern CT</td>
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<tr>
<td>2</td>
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<td></td>
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<td>2x4 Bridging Pattern CT</td>
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<td>PMS-G-1</td>
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<tr>
<td>3</td>
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<td>* Ten</td>
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<td></td>
<td>Gypsum's Joint Compound</td>
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<tr>
<td>PMS I-1</td>
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<td></td>
<td>2x4 Dot Pattern CT</td>
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<tr>
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*Comments/Special Instructions:*

*Tem upon Receipt*
Asbestos Bulk Building Material
Chain of Custody
EMSL Order Number (Lab Use Only):
411901684

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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<thead>
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<th>Sample #</th>
<th>HA #</th>
<th>Sample Location</th>
<th>Material Description</th>
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<tbody>
<tr>
<td>m5-J-1</td>
<td>2</td>
<td>Hallway Windows - WGC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>× Ten</td>
<td></td>
</tr>
<tr>
<td>m5-K-1</td>
<td>2</td>
<td>Tan Carpet Mastic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>× Ten</td>
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*Comments/Special Instructions:*

*Ten upon receipt*

Page 3 of 3 pages

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos % Type</th>
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<tbody>
<tr>
<td>PMS-L-1</td>
<td>Ext. Window Glazing Compound</td>
<td>White Non-Fibrous Homogeneous</td>
<td>10% Ca Carbonate</td>
<td>90% Non-fibrous (Other)</td>
<td>&lt;1% Chrysotile</td>
</tr>
<tr>
<td>PMS-L-2</td>
<td>Ext. Window Glazing Compound</td>
<td>Gray/Tan Non-Fibrous Homogeneous</td>
<td>2% Fibrous (Other)</td>
<td>20% Ca Carbonate</td>
<td>78% Non-fibrous (Other)</td>
</tr>
<tr>
<td>PMS-M-1-Caulk</td>
<td>Ext. Window-Door Caulk</td>
<td>White Non-Fibrous Homogeneous</td>
<td>100% Non-fibrous (Other)</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>PMS-M-1-Glazing</td>
<td>Ext. Window-Door Caulk</td>
<td>Tan/White Fibrous Homogeneous</td>
<td>96% Non-fibrous (Other)</td>
<td>4% Chrysotile</td>
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</tr>
<tr>
<td>PMS-M-2</td>
<td>Ext. Window-Door Caulk</td>
<td>Tan/White Non-Fibrous Homogeneous</td>
<td>97% Non-fibrous (Other)</td>
<td>3% Chrysotile</td>
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<td>PMS-N-1</td>
<td>Ext. Addition Window Glazing Compound</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>15% Ca Carbonate</td>
<td>85% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>PMS-N-2</td>
<td>Ext. Addition Window Glazing Compound</td>
<td>Gray/Tan Non-Fibrous Homogeneous</td>
<td>2% Fibrous (Other)</td>
<td>20% Ca Carbonate</td>
<td>78% Non-fibrous (Other)</td>
</tr>
<tr>
<td>PMS-O-1</td>
<td>Auditorium - Door Caulk</td>
<td>Gray Fibrous Homogeneous</td>
<td>90% Non-fibrous (Other)</td>
<td>10% Chrysotile</td>
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</tr>
<tr>
<td>PMS-O-2</td>
<td>Auditorium - Door Caulk</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>94% Non-fibrous (Other)</td>
<td>6% Chrysotile</td>
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## Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

<table>
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<th>Sample ID</th>
<th>Description</th>
<th>Appearance</th>
<th>% Matrix Material</th>
<th>% Non-Asbestos Fibers</th>
<th>Asbestos Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMS-L-3</td>
<td>Ext. Window Glazing Compound</td>
<td>White Non-Fibrous Homogeneous</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>411901863-0003</td>
<td></td>
<td></td>
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<td>PMS-M-3-Caulk</td>
<td>Ext. Window-Door Caulk</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<td>411901863-0006</td>
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<td>PMS-N-3</td>
<td>Ext. Addition Window Glazing Compound</td>
<td>White Non-Fibrous Homogeneous</td>
<td>100.0 Other</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<td>411901863-0009</td>
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<td>PMS-O-3</td>
<td>Auditorium - Door Caulk</td>
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</table>

Positive Stop (Not Analyzed)

### Analyst(s)

- **Derrick Young (3)**
- **Lee Plumley, Laboratory Manager or other approved signatory**

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.
**Asbestos Bulk Building Material**

**Chain of Custody**

**EMSL Order Number (Lab Use Only):**

| Company: Terracon Consultants, Inc. | EMSL-Bill to: □ Same □ Different
| Street: 72 Pointe Circle |
| City: Greenville | If Bill to is Different note instructions in Comments**
| State/Province: SC | Third Party Billing requires written authorization from third party
| Zip/Postal Code: 29615 | Country: US
| Report To (Name): Jeffrey Gurrie | Telephone #: 864-292-2901
| Email Address: jagurrie@terracon.com | Fax #: 864-292-6361
| Project Name/Number: 86197015 Palmetto Middle | Purchase Order:
| U.S. State Samples Taken: SC | Please Provide Results: [ ] Fax [ ] Email [ ] Mail
| CT Samples: □ Commercial/Taxable □ Residential/Tax Exempt |

**Turnaround Time (TAT) Options** – Please Check

- [ ] 3 Hour
- [ ] 6 Hour
- [ ] 24 Hour
- [ ] 48 Hour
- [ ] 72 Hour
- [ ] 96 Hour
- [ ] 1 Week
- [ ] 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule.*

There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

<table>
<thead>
<tr>
<th>PLM - Bulk (reporting limit)</th>
<th>TEM - Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ PLM EPA 600/R-93/116 (&lt;1%)</td>
<td>□ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1</td>
</tr>
<tr>
<td>□ PLM EPA NOB (&lt;1%)</td>
<td>□ NY ELAP Method 198.4 (TEM)</td>
</tr>
<tr>
<td>Point Count □ 400 (&lt;0.25%) □ 1000 (&lt;0.1%)</td>
<td>□ Chattfield Protocol (semi-quantitative)</td>
</tr>
<tr>
<td>Point Count w/Gravimetric □ 400 (&lt;0.25%) □ 1000 (&lt;0.1%)</td>
<td>□ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2</td>
</tr>
<tr>
<td>□ NIOSH 9002 (&lt;1%)</td>
<td>□ TEM Qualitative via Filtration Prep Technique</td>
</tr>
<tr>
<td>□ NY ELAP Method 198.1 (friable in NY)</td>
<td>□ TEM Qualitative via Drop Mount Prep Technique</td>
</tr>
<tr>
<td>□ NY ELAP Method 198.6 NOB (non-friable-NY)</td>
<td>Other</td>
</tr>
<tr>
<td>□ OSHA ID-191 Modified</td>
<td></td>
</tr>
<tr>
<td>□ Standard Addition Method</td>
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</tbody>
</table>

**Check For Positive Stop – Clearly Identify Homogenous Group**

[ ] Check For Positive Stop – Clearly Identify Homogenous Group

*Date Sampled: 2/26/13*

**Samplers Name:** Gurrie

**Samplers Signature:**

<table>
<thead>
<tr>
<th>Sample #</th>
<th>HA #</th>
<th>Sample Location</th>
<th>Material Description</th>
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</thead>
<tbody>
<tr>
<td>Pms-L-1</td>
<td>2</td>
<td></td>
<td>Ext Window Glazing Compounds</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pms-M-1</td>
<td>2</td>
<td></td>
<td>Ext Window/Door Cauze</td>
</tr>
<tr>
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<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pms-N-1</td>
<td>2</td>
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<td>Ext Auditor Window Glazing Compounds</td>
</tr>
<tr>
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**Client Sample # (s):**

*Date: 2/26/13*

**Total # of Samples:**

**Relinquished (Client):**

*Date: 2/26/13*

**Received (Lab):**

*Date: 2/27/13*

**Comments/Special Instructions:**

EMSL Analytical, Inc.
10801 Southern Loop Blvd
Pineville, NC 28134
PHONE: (704) 525-2205
FAX: (704) 525-2382

OrderID: 411901863

Page 1 of 2 pages

7956 8996 0607
<table>
<thead>
<tr>
<th>Sample #</th>
<th>HA #</th>
<th>Sample Location</th>
<th>Material Description</th>
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<td>PMS-01</td>
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<td>CAULK</td>
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<td></td>
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<td>X TSM</td>
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*Comments/Special Instructions:

Bill To: Terracon Consultants, Inc., 10841 S. Ridgeview Rd, Olathe, KS, 66061, US
Attention: Phone: 913-599-6886 Email: Purchase Order

Page 2 of 2 pages
DRAWINGS
Notes:

Contractor may divide building into sections for work activities. The Contractor shall submit a written plan to define work areas, anticipated decon and loadout areas, and waste container location prior to mobilization to the site.

Flooring: The lower layer of floor tile throughout the school contains asbestos. Due to the layered floor system removal shall be within a negative pressure enclosure (full containment), unless the contractor can demonstrate both layers of floor tile can be removed intact. The base coat mastic also contains asbestos and shall be included in the containment removal.

TSI: Remove and dispose of asbestos-containing TSI on boilers, tanks, and duct in boiler room. Removal shall be within a negative pressure enclosure (full containment). Piping extends sub-grade from boiler room and the exact path is unknown. Contractor shall provide an alternate cost for the removal of sub-grade pipe insulation.

Cementitious Board (Transite): The AHERA book has ceiling transite listed in several locations including bathrooms, kitchen areas, boiler rooms, janitor's rooms, and locker rooms. Additionally, this material exists at exterior walkways, windows, and soffits. Remove and dispose of asbestos-containing ceiling plaster at entrances and in the old mechanical room. Removal shall be within a negative pressure enclosure (full containment).

Caulking: Remove and dispose of asbestos-containing gray, black, and white caulking at windows and doors throughout the building (interior and exterior). Polyethylene sheets or other resilient drop cloths or tarps shall be placed on the surfaces inside and outside the base of each component prior to the start of caulking removal. The dimensions of each drop cloth shall be large enough to catch pieces of caulking that may fall or be dislodged from the component during removal and handling.

Roofing: Roofing at the time of writing was not accessed due to occupancy and weather. Sampling will be conducted prior to start. Roofing materials are assumed to contain asbestos until sampling proves otherwise. Provide an alternate cost for removal of roofing materials.
Asbestos Abatement Plan

Wren Middle School
1010 Wren School Road
Piedmont, South Carolina
March 6, 2019
Terracon Project No. 86197029

Prepared for:
Anderson School District 1
Williamson, South Carolina

Prepared by:
Terracon Consultants, Inc.
Greenville, South Carolina

Jeffrey A. Gurrie
SC Asbestos Project Designer #ASB-22728
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APPENDIX

Additional Sampling Table and Analytical Results

DRAWINGS

Figure A1 Work Area Overview
SECTION 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PROJECT DIRECTORY

Owner: Anderson School District 1
801 N Hamilton Street
Williamston, South Carolina 29697
Representative: Andy Finley

Designer: Terracon Consultants, Inc.
72 Pointe Circle
Greenville, South Carolina 29615
Representative: Jeffrey Gurrie, CIH

PROJECT/WORK IDENTIFICATION

The project name is Asbestos Abatement for Wren Middle School located at 1010 Wren School Road in Piedmont, South Carolina. The project involves the removal of asbestos-containing materials (ACM). A copy of the Asbestos Hazard Emergency Response Act (AHERA) is available for review by the Owner and is incorporated by reference. Additionally, several additional samples were collected by Terracon Consultants, Inc. (Terracon) and is presented in Appendix A.

This Work involves abatement of various materials in areas within the defined Work area identified on Figure A1 in Appendix B. The materials identified consist of:

- Bottom layer of floor tile and associated mastic throughout the school;
- Thermal system insulation on piping in areas of the school;
- Interior door/window caulk (including hallway windows);
- Exterior door/window caulk;
- Exterior ceiling plaster at entrances and in the old mechanical room; and
- Roofing materials.
In general the Work will consist of the following:

I. Surfacing Materials

   A. Remove and dispose of asbestos-containing ceiling plaster at entrances and in the old mechanical room. Removal shall be within a negative pressure enclosure (full containment). See Section 02081 for additional work practices. Remove and dispose of fiberglass insulation above or behind ceilings as asbestos contaminated waste.

II. Thermal System Insulation (TSI)

   A. Remove and dispose of asbestos-containing TSI. Elbows, fittings, and tees exist throughout the school. Removal shall be within a negative pressure enclosure (full containment) or by glovebag. See Section 02081 for additional work practices.

III. Miscellaneous Materials

   A. Floor tile and associated mastic. The lower layer of floor tile throughout the school contains asbestos. Due to the layered system removal shall be within a negative pressure enclosure (full containment), unless the contractor can demonstrate both layers of floor tile can be removed intact. See Section 02081 for additional work practices.

   B. Caulking. Remove and dispose of asbestos-containing gray, black, and white caulking at windows and doors throughout the building (interior and exterior). Polyethylene sheets or other resilient drop cloths or tarps shall be placed on the surfaces inside and outside the base of each component prior to the start of caulking removal. The dimensions of each drop cloth shall be large enough to catch pieces of caulking that may fall or be dislodged from the component during removal and handling. See Section 2081 for additional work practices.

   C. Roofing Materials. Roofing materials are assumed to contain asbestos until sampling proves otherwise. Provide an alternate cost for removal of roofing materials. Remove and dispose of asbestos-containing roofing materials identified in the asbestos survey report. This material should be removed intact as a non-regulated, non-friable material. See Section 02081 for additional work practices.

IV. Non-Asbestos Materials

   A. Non-ACM materials such as ceiling tile may be removed to access ACM. These materials may be disposed of as construction waste. Waste shall be containerized and promptly disposed of offsite.
SUMMARY OF WORK

The Work includes removal and disposal of ACM and non-ACM designated above and on Figure A1. The Work shall be conducted and techniques utilized as specified in the documents.

Contractor will provide, erect and maintain all barricades, traffic control devices, hand railings, toe boards, safety devices, scaffolds, safety measures and security measures necessary for the protection of the Contractor’s employees, Owner, Designer, and Air Monitoring Firm until the completion of work specified under this Agreement. Safety devices removed during abatement (handrails, flooring, etc.) must be corrected, reinstalled, or demarcated to prevent safety issues.

Negative pressure and a full containment shall be established during all regulated removal activities. Manometer readings are required during the entire project. Readings may be a continuous strip or documented in writing by the Abatement Contractor at each location at least four times per 8-hour work shift.

Asbestos containing material found to extend from the designated areas into, through, above, or below walls, ceilings, roofs or other barriers is also included in this specification. The Contractor is responsible for verifying quantities and locations of asbestos-containing materials at this facility. The Contractor will refer to Section 02081 for specified procedures pertaining to Work Area designations.

General and Administrative: Requirements are set forth in the following specification sections:

- 01013 Summary of the Work - Asbestos Abatement
- 01043 Project Coordination - Asbestos Abatement
- 01091 Definitions, Codes, Regulations and Standards – Asbestos Abatement

Abatement Work: Requirements are set forth in the following specification sections, listed here according to the sequence of the Work:

- 01091 Definitions, Codes, Regulations and Standards - Asbestos Abatement
- 01410 Air Monitoring
- 01503 Temporary Facilities - Asbestos Abatement
- 01513 Exhaust Ventilation System
- 01560 Worker Protection – Asbestos Abatement
- 01562 Respiratory Protection
- 01563 Decontamination Units

Asbestos Removal Work: Procedures are described in the following specification sections:

- 02081 Removal of Asbestos Containing Materials
- 02084 Disposal of Asbestos Containing Materials
- 09805 Lock Down Procedures
POTENTIAL HAZARDS

The disturbance or dislocation of asbestos materials may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard 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 hazard and of proper work procedures which must be followed.

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 asbestos-containing materials, take appropriate continuous measures as necessary to protect staff and occupants of Greenville Technical College (including buildings adjacent to the site) from the potential hazard of exposure to airborne asbestos. Such measures will include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

ASBESTOS-CONTAINING MATERIALS

The known asbestos-containing materials to be removed are identified in the asbestos inspection report. The Contractor is responsible for verifying all existing conditions and quantities at these facilities.

OWNER OCCUPANCY

Partial Owner Occupancy: The Owner reserves the right to place and install equipment as necessary in areas of the buildings in which asbestos abatement and project decontamination procedures have been completed, and to occupy such completed areas prior to substantial completion, provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work or any part of the Work.

The Owner will occupy parts of the building that are not included in the scope of work. The contractor shall isolate the work area using lockable hard barriers from occupied areas of the building.

PROTECTION OF EXISTING ITEMS

Contractor shall be responsible for maintaining furnishings, driveways, and equipment not specified for removal and disposal. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor. The Owner will provide the Contractor a written list of salvaged items (if any) and a storage location
for items to be moved and turned over. The Contractor is responsible for removing these items without damage and transporting to the designated storage location onsite.

AIR MONITORING

The Owner will contract a firm to provided area air monitoring prior to, during, and after abatement of materials by the Contractor. The Contractor is responsible for OSHA compliance monitoring. The Owner’s air monitoring firm WILL NOT analyze samples for Contractor’s OSHA compliance.

Samples must be analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory. When fiber counting is performed onsite, the analyst must be proficient in AIHA’s Asbestos Analysts Registry (AAR) program or in the company’s laboratory which must be proficient in AIHA’s Proficiency Analytical Testing (PAT) program. The Air Monitoring Firm shall also have in place a quality assurance program for the analysis of samples during abatement.

The role of the Air Monitoring Firm is to act as the Owners onsite representative and it will communicate with the Owner and Designer as to compliance with applicable regulations and written specifications. The Air Monitoring Firm shall be prepared to enter regulated areas to verify Contractor’s work practices at any time during the project as well as perform verification on containment construction and work practices during and at critical junctures throughout the project.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION
Asbestos Abatement Plan
Wren Middle School ● Piedmont, SC
March 6, 2019 ● Section 01043

SECTION 01043 - PROJECT COORDINATION – ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Minimum administrative and supervisory requirements necessary for coordination of Work on the project include but are not necessarily limited to the following:

   Administrative and supervisory personnel
   Special reports

ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

General Superintendent: Maintain a full-time General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 CFR 1926 for the Contractor and is the Contractor's representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to asbestos containing materials. This person should have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, have had a minimum of five years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. The General Superintendent must have had responsible charge of a minimum of three (3) asbestos abatement projects similar in size and type to the work of this contract.

Head Foreman: Maintain one Head Foreman experienced in supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have not less than five years of full-time experience in responsible charge of asbestos removal operations similar in scope and magnitude to this project. Head Foreman must remain onsite at all times the Work is in progress.

Crew Leader: For every ten asbestos removal workers (laborers) utilized on this project, provide one experienced AHERA accredited Supervisor having three years minimum experience in successful asbestos removal operations similar in scope and magnitude to this Project. A minimum of one crew leader is required to remain inside EACH work area at all times the Work is in progress.
COORDINATION:

Coordinate construction operations and scheduling with partial occupancy requirements of the Owner and the Owner's use of utilities.

Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly completion of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

An initial progress meeting, recognized as "Pre-Construction Meeting" will be convened by the Owners representative prior to start of any work. The preconstruction meeting will be scheduled before start of construction, at a time convenient to the Owner and the Owners Representative, but no later than 15 days after execution of the Agreement. Meet at the project site, or as otherwise directed, with General Superintendent, Owner, Designer, Project Administrator, and other entities concerned with the asbestos abatement work.

SPECIAL REPORTS:

General: Except as otherwise indicated, submit special reports directly to Owner within one day of occurrence requiring special report, with copy to Designer and others affected by occurrence.

Reporting Unusual Events and Inspections by Regulatory Officials: When an event of unusual and significant nature occurs or inspection by an outside party, etc. prepare and submit a special report listing chain of events, persons participating, response by Contractors' personnel, evaluation of results or effects, and similar pertinent information. When such events are predictable, advise Owner at earliest possible date. In the event of inspections by regulatory officials the contractor shall contact the Owner and Designer immediately.

Reporting Accidents: Prepare and submit reports of accidents, at site and anywhere else Work is in progress. Record and document data and action; comply with industry standards. For this purpose, an accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event poses a significant threat of loss or personal injury.

Pre-Construction Inspection: Inspect areas in which work will be performed, prior to commencement of work. Prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions (with permission from the Owner) as necessary to document conditions. Submit to Owner/Designer for record purposes prior to starting work.

Contingency Plan: Prepare a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or Work Area isolation procedures.
Include in plan specific procedures for decontamination or Work Area isolation. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

Project Directory: Develop a directory of all entities involved in the project. Post copies of the Project Directory in the temporary field office. Include the 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, mobile phone numbers and addresses of:

1. Owner, Designer, and Project Administrator
2. Contractor's General Superintendent, supervisory personnel and Contractor's 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.

Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit to the Owner and Designer 10 days prior to the date established for "Commencement of the Work." Work will not commence until a written schedule is submitted.

Progress Meetings: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Contractor shall hold general progress meetings as required. Meetings shall be every two weeks at a minimum. Representatives of the Owner will attend these meetings. In addition to representatives of the Contractor, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the work. The Contractor shall prepare meeting minutes and distribute to the attendees within 48 hours of the meeting.

General Work Plan: The contractor shall develop a written work plan to define work areas, anticipated decontamination/loadout unit locations, and waste container location prior to mobilization to the site. Submit to the Owner and Designer 10 days prior to mobilization.

SUBMITTALS:

Refer to Section 01300 for specific details on these required submittals.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)
SECTION 01091 - DEFINITIONS, CODES, REGULATIONS AND STANDARDS-
ASBESTOS ABATEMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other
Division 1 Specification sections, apply to Work of this section.

DEFINITIONS:

Adequately Wet: To sufficiently mix or penetrate with liquid to prevent the potential release of
particulates.

Aerosol: A system consisting of particles, solids or liquids, suspended in air.

Airlock: System for permitting ingress and egress without permitting air movement between a
contaminated area and an uncontaminated area, typically consisting of two curtained doorways
protected by two overlapping polyethylene sheets and separated by a sufficient distance such that
one passes through one doorway into the chamber, allowing the doorway sheeting to overlap and
close off the opening before proceeding through the second doorway. The airlock maintains a
pressure differential between the contaminated and uncontaminated areas thereby further
minimizing flow-through contamination.

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

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

Asbestos: The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite),
cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite. For purposes of
determining respiratory and worker protection both the asbestiform and non-asbestiform varieties
of the above minerals and any of these materials that have been chemically treated and/or altered
shall be considered as asbestos.

Asbestos-Containing Material (ACM): Any material containing more than 1 percent by weight
of asbestos of any type or mixture of types.

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.
Authorized Visitor: The Owner, the Designer, or a representative of any federal, state and local regulatory or other agency having authority over the project.

Barrier: Any surface that seals off the Work Area to inhibit the movement of fibers.

Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 inches to 9 inches.

Category I nonfriable asbestos-containing material (ACM): Nonfriable asbestos or nonfriable asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos.

Category II nonfriable ACM: Any material other than packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos that cannot, when dry be crumbled, pulverized, or reduced to powder by the force expected to act upon it in the course of demolition or renovation operations.

Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Clean Room: An uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment. Also known as the "Change Room."

Clearance monitoring: Area air sampling performed using aggressive clearance sampling techniques to determine the airborne concentrations of residual fibers upon conclusion of asbestos abatement.

Curtained Doorway: A device to allow ingress and egress from one room to another while minimizing air movement between the rooms. Typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway and securing each along the top of the doorway, with the vertical edge of one along one vertical side of the doorway, and the vertical edge of the other along the opposite vertical side. Two curtained doorways spaced a minimum of three feet apart for an airlock.

Decontamination Enclosure System: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains an airlock.

Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operation.
Disposal Bag: Six mil thick leak-tight plastic bags used for transporting asbestos waste from Work Area to disposal site.

Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

and

Name of Waste Generator:
(Name of Contractor and Owner)

Location of Waste Generated:

Encapsulation: A form of abatement involving the treatment of regulated asbestos-containing material (RACM) with a liquid which covers the surface with a protective coating (bridging) or embeds fibers in an adhesive matrix (penetrating) to prevent the release of asbestos fibers.

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

Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the Work Area, a washroom, and an uncontaminated area.

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

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

Friable Asbestos-containing Material: Any material that when dry can be or has been crumbled, pulverized, or reduced to powder, and contains more than 1 percent asbestos.
Glovebag: A single use sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with two inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

Grind: To reduce to powder or small fragments. Grinding includes mechanical chipping or drilling.

HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns in length.

HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High Efficiency Particulate Absolute filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97 percent efficiency for retaining fibers of 0.3 microns or larger.

Holding Area: A chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system. The holding area constitutes an airlock.

Local Exhaust Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a negative pressure inside the Work Area and a constant air flow from adjacent areas into the Work Area and exhausting that air outside the Work Area.

Lockdown: A procedure whereby the surface of the Work Area is coated with latex paint or other suitable sealant, using an airless sprayer, after final visual clearance from the Air Monitoring Firm, Designer or Owner, to fix in place and render non-friable, any traces of asbestos material that may remain.

Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (Work Area).

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.

Owner/Operator: Any person or contractor who owns, leases, operates, controls, or supervises a facility being demolished or renovated, or any person who operates, controls, or supervises the demolition or renovation operation, or both.

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

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.
Regulated Asbestos-Containing Material (RACM):  (a) Friable asbestos-containing material; (b) Category I nonfriable ACM that has become friable; (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 is likely to become 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.

Removal:  The act of removing asbestos-containing or contaminated materials from a structure and depositing in a suitable disposal site.

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

Shower Room:  A room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.

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

Testing Laboratory:  The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report results of those inspections or tests.

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

Washroom:  A room between the Work Area and the holding area in the equipment decontamination enclosure system. The washroom constitutes an airlock.

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.

Work Area:  The area(s) 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 1926.1101.
CODES, REGULATIONS, AND STANDARDS:

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, 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 are bound herewith.

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 Owner and Designer harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

Federal Requirements: Which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

U.S. Department of Labor, Occupation Safety and Health Administration, (OSHA), including but not limited to:

Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations

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

Construction Industry
Title 29, Part 1926, of the Code of Federal Regulations
Access of Employee Exposure and Medical Records
Title 29, Part 1910, Section 120 of the Code of Federal Regulations

Asbestos Hazard Emergency Response Act
40 CFR Part 763 (The Final Rule)
Hazard Communication
Title 29, Part 1910, Section 1200 of the
Code of Federal Regulations
Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, Section 145 of the
Code of Federal Regulations

U. S. Environmental Protection Agency (EPA) including but not limited to:

Asbestos Abatement Projects Rule
40 CFR Part 762
CPTS 62044, FRL 2843-9
Federal Register, Vol 50 No 134, July 12, 1985
P28530-28540

Regulation for Asbestos
Title 40, Part 61, Sub-part A of the
Code of Federal Regulations

National Emission Standard for Asbestos
Title 40, Part 61, Sub-part M (Revised Sub-part B)
of the Code of Federal Regulations

EPA Guidance Documents: which discuss asbestos abatement work or hauling and
disposal of asbestos waste materials are listed below for the contractor's information only. These documents do not describe the Work and are not a part of the Work of this contract. EPA maintains an information number (800) 334-8571; publications can be ordered from (800) 424-9065 in Washington, DC):

Parts 1 & 2. (Orange Books) EPA C00090 (out of print)

Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule
(40 CFR Part 763).

Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA
560/5-84-006.

Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA
560/5-84-006.

Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA
560/5-85-018.
Asbestos Waste Management Guidance. EPA 530-SW-85-007.


State Requirements: South Carolina Department of Health and Environmental Control (SCDHEC) Regulation 61-86.1 Standards of Performance for Asbestos Projects. Abide by all state rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing or hauling and disposal of asbestos waste material.

Local Requirements: Abide by all local rules, regulations, ordinances, etc. which govern the specified asbestos abatement work, licensing, or hauling and disposal of asbestos waste removal.

Industry Recognized Standards


END OF SECTION
SECTION 1300 - SUBMITTALS

PART 1 - GENERAL

RELATED DOCUMENTS

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK

General: The required submittals are identified in this section and/or elsewhere in the Specification. Make submittals to the Owner in a timely manner and at appropriate times in the execution of the Work to allow for sufficient and prompt review by the Owner. Removal work will not commence until submittals are received by the Owner and/or Designer. Revise and resubmit as necessary.

Submittals as required in the Contract Documents shall be submitted in electronic format (PDF). Submit complete sets to the Owner and/or Designer for his review of "Pre-Job Submittals" on or before the date of the pre-construction meeting. The Work may not proceed until the complete pre-job submittal package has been reviewed and approved by the Owner and/or Designer.

Submit complete sets to the Designer for his review of "Post-Job Submittals" following the final completion of the Work. Request for final payment will not be approved until the post-job submittal package has been reviewed by the Owner and/or Designer.

Identify individual submittals by name and include a table of contents in each submittal package.

Pre-Job Submittals.

1. Permits: Permits required for the removal, encapsulation, handling of asbestos containing materials, and general contracting will be obtained by the Contractor.

The Contractor shall obtain all permits required by state and/or local regulatory agencies or jurisdictions for the transportation and disposal of asbestos containing waste.

Post one copy of all permits at the Work site. Keep on file in the Contractor's office one copy of each and provide a current copy of each to the Owner.
2. Submit complete information relative to the following:

   Submit a copy of the completed Asbestos Removal Notice Form.

   Submit South Carolina Licenses for all workers and supervisors participating on the project.

   Submit names of Supervisory personnel including superintendent, head foreman, crew leader(s), and workers and their qualifications and training including:

   Individually signed Respiratory Training Form or equivalent for each worker to be utilized on the project.

   Individually signed Certificates of Worker Training or equivalent for each worker to be utilized on the project.

   Contractor's affidavit that all Contractor's employees on this project have successfully completed medical surveillance as required by 29 CFR 1926 and the statement by a medical doctor.

   Hazardous Waste Management Plan.

3. For each Work Area, submit a plan of action: Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the abatement plan, a contingency emergency plan, the location and layout of the de-contamination areas, the sequencing of asbestos work, methods to be used to assure the safety of site visitors, disposal plan, including location of approved disposal site, and a detailed description of the methods to be used to control pollution and ensure site security. Expand upon the use of portable HEPA ventilation systems, closing out of the building's HVAC system, method of removal to prevent visible emissions from the Work Area, and packaging of removed asbestos debris. Include sequencing and schedule for installation of architectural finishes/materials. The plan must be approved by the Designer prior to commencement of Work.

Submittals During the Work and Post Job Submittals: All submittals must be turned over to the Owner and/or Designer as outlined below.

1. Revise and submit progress schedule as needed.
2. Submit training certificates for all new or additional employees before their assignment to the project.
3. A copy of daily security, worker, and visitor log signed by the superintendent on a weekly basis.

4. Static pressure differential records on a weekly basis.

5. Submit a copy of employee air monitoring results relative to OSHA respiratory protection level compliance on a weekly basis.

6. Transport manifests and landfill receipts as they are received.

7. Post-job submittals must be turned over to the Owner and/or Designer no later than ten working days after completion of Work and prior to the final request for payment.

Submittals for Air Monitoring Firm:

1. Submit required information outlined in Section 01410 to the Designer.

2. Prior to mobilization submit the following to the Owner and/or Designer: SCDHEC license, AIHA AAR/PAT letter of proficiency, firm’s QA program, and equipment calibration certificates.

3. On a weekly basis submit air sample analysis, QA data (reference counts, recounts, and microscope calibration checks) and daily field notes to the Owner and/or Designer.

4. At the conclusion of the project submit a summary report of the air monitoring activities to the Owner and/or Designer no later than ten working days after completion of Work and prior to the final request for payment.

PART 2 - PRODUCTS

MANUFACTURER’S LITERATURE:

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents is being submitted for review.

Submit an electronic copy to Owner and/or Designer for their review and file.
PART 3 - EXECUTION

QUALITY ASSURANCE:

Coordination of Submittals

Carefully review all aspects of each item being submitted.

Verify that each item and its appropriate submittals conform in all respects with the specified requirements.

Certify, by affixing signature of Contractor's authorized representative to the corner of each submittal package, that this coordination has taken place.

IDENTIFICATION OF SUBMITTALS:

Number consecutively and clearly identify all submittals. Show identification information on at least the first page of each submittal and elsewhere as necessary for positive identification of submittal.

Accompany each submittal package with a letter of transmittal showing all information required for identification and checking.

GROUPING OF SUBMITTALS:

Group submittals into packages identified as "Pre-Job Submittals" and "Post-Job Submittals".

Partial submittals may be rejected for noncompliance with the Contract Documents.

TIMING OF SUBMITTALS:

Make submittals far enough in advance of scheduled dates for commencement, execution or installation to provide time required for review, for securing necessary approvals, for possible revisions and resubmittals and for placing orders and securing delivery.

The Owner and/or Designer will use his best efforts to review submittals within three days of receipt of submittals.

Contractor will be held responsible for delays occasioned by in-complete submittals packages.
OWNER/DESIGNER’S REVIEW:

Review by the Owner and/or Designer does not relieve the Contractor from responsibility for errors which may exist in the submitted data. The Contractor will be solely responsible for the means, methods, techniques, sequences, and procedures involved in the execution of the Work.

Make revisions as required by the Owner and/or Designer and resubmit for approval.

END OF SECTION
SECTION 01410 - AIR MONITORING

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF THE WORK:

For this project, the Owner will select an Air Monitoring Firm. This section describes air monitoring carried out by the Air Monitoring Firm to verify that the outside environment remain uncontaminated. This section also sets forth airborne fiber levels outside the Work Area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

Air monitoring required by OSHA is the responsibility of the Contractor and is not covered in this section. Owner will not be performing air monitoring to meet these requirements. Owner’s third-party air monitor will not analyze air samples collected by Contractor.

AIR MONITORING QUALIFICATIONS:

The following is required of the onsite air monitor for this project:

A. Have a current SCDHEC license for air monitoring.

B. The onsite analyst shall be proficient in AIHA’s Asbestos Analysts Registry (AAR) program and submit evidence to the Owner. If samples are not analyzed onsite the Air Monitoring Firm’s laboratory shall be proficient in AIHA’s PAT program.

C. Submittal of firms Quality Assurance program to meet the requirements of NIOSH Method 7400, Asbestos and Other Fibers by PCM.

D. Submit current calibration certificates for air calibration devices used onsite.

E. Have at least 90 days of onsite experience monitoring asbestos abatement projects.
AIR MONITORING:

A. Work Area Isolation: A function of the Air Monitoring Firm will be to detect faults in the Work Area isolation such as:

1. Failure of filtration or rupture in the local exhaust system,

2. Contamination of the exterior of the building with airborne asbestos fibers.

B. Should any of the above occur, the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Designer.

C. Work Area Airborne Fiber Count: The Air Monitoring Firm will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne fiber counts which may significantly challenge the ability of the Work Area isolation procedures to protect the outside of the building from contamination by airborne fibers.

D. Work Area Clearance: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Air Monitoring Firm will sample and analyze air as specified in other sections.

E. The Air Monitoring Firm will be conducting air monitoring during the course of the project and shall be physically onsite during active collection of samples to maintain sample integrity and provide work practice observations to the Owner and Designer.

ANALYTICAL METHODS:

All daily area air samples will be analyzed by phase contrast microscopy (PCM) using NIOSH, 7400 Method. Clearance samples for work areas applicable to SCDHEC R. 61-86.1 shall be analyzed by Transmission Electron Microscopy in accordance with 40 CFR 763.

SCHEDULING:

A. Testing by the Air Monitoring Firm shall be performed in areas and at times during the Work as deemed necessary by the Designer or as specified in the Contract Documents.

B. Unless otherwise approved by the Designer, Contractor shall schedule final testing at least twenty-four hours prior to desired time of testing. Notification shall be made to the Designer, Owner, and Air Monitoring Firm in writing.
C. Unless otherwise approved by the Designer, Contractor shall notify the Designer 72 hours prior to variations in the originally scheduled work hours, in order to receive approval from the Designer and Owner to arrange proper testing services.

D. Coordinate other scheduling with Designer as necessary.

RESULTS:

A. All testing and analysis will be performed promptly and results issued expeditiously in order to minimize any possible delay in the progress of the Work.

B. Test results will be available to Owner, Designer, and Contractor as follows:

1. Air sample results by Phase Contrast Microscopy: 24 hours from sample extraction time.

2. Air sample clearance results by Transmission Electron Microscopy: 24 hours from sample receipt at the laboratory.

3. Results of other tests deemed necessary by Designer: as quickly as possible but not later than three days following completion of test(s) and receipt of results.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

SCHEDULE OF AIR SAMPLES:

General: The number and volume of air samples will be in accordance with the following schedule:
Before Start of Work:

The Air Monitoring Firm will secure the following Air Samples to establish a baseline before start of Work.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analytical Method</th>
<th>Minimum Volume (L)</th>
<th>Flow Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within each Work Area &amp; adjacent to the work area</td>
<td>5</td>
<td>NIOSH 7400</td>
<td>1200</td>
<td>3.0-12.0</td>
</tr>
</tbody>
</table>

From start of Work through the project decontamination, the Air Monitoring Firm will conduct representative daily samples inside and outside each work area as described in SCDHEC R. 61-86.1. Each air exhaust from containments shall be measured daily.

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analytical Method</th>
<th>Flow Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside &amp; Outside Each Work Area</td>
<td>4-6</td>
<td>NIOSH 7400</td>
<td>3.0-12.0</td>
</tr>
</tbody>
</table>

If airborne fiber counts exceed 0.1 f/cc in contained work areas, additional samples will be taken as necessary to monitor fiber levels.

If any air samples taken outside of the Work Area exceeds the 0.01 f/cc then Contractor will be required to immediately and automatically stop all Work and take remedial action. The Owner and Designer shall be notified immediately.

PERSONNEL MONITORING:

Contractor shall be responsible for OSHA air monitoring requirements. Contractor’s OSHA monitoring shall be analyzed by an independent laboratory. Owner’s third-party air monitor will not analyze air samples collected by Contractor. The contractor shall submit results of the monitoring to the Designer on a weekly basis.
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FINAL INSPECTIONS AND CLEARANCE TESTING

See section 02081.

REPORTING

At the completion of the project, the air monitoring firm shall prepare a report describing the assessment of the project, all air monitoring data, acceptance letters, calibration records, quality assurance documentation referenced in NIOSH 7400, and a description of the project as it proceeded to completion and submit an electronic copy of the report to the Designer.

END OF SECTION
SECTION 01503 - TEMPORARY FACILITIES

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the Work.

PART 2 - PRODUCTS

MATERIALS AND EQUIPMENT:

General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only material and equipment that is recognized as being suitable for the intended use, and is in compliance with appropriate standards.

WATER SERVICE:

A. Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection.

B. Water Hoses: Employ hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each area and to each Decontamination Unit.

C. Hot Water: Hot water is not available from Owner. Contractor will provide necessary water heating equipment.

D. Relocate, modify and extend services and facilities as required during the course of Work so as to accommodate the entire Work of the project.
ELECTRICAL SERVICE:

A. General: Provide a weatherproof, grounded temporary power service and distribution system of sufficient size, capacity, and power characteristic to accommodate performance of Work during the construction period. An electrical ground fault circuit interrupter shall be utilized between the power source and the site of containment usage. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of Work. Contractor may use existing electrical service with permission from the Owner. If power is unavailable from Owner, Contractor shall provide power source.

B. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general, run wiring overhead and rise vertically where wiring will be least exposed to damage from construction operations.

SCAFFOLDING:

Provide scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of scaffolding shall comply with applicable OSHA provisions.

FIRE EXTINGUISHERS:

Fire Extinguisher: Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area. Provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

TEMPORARY STRUCTURES:

A. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Separate handwashing facilities shall also be provided.
PART 3 - EXECUTION

INSTALLATION, GENERAL

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required. Installation shall be in compliance with manufactures instructions, OSHA, NFPA, and/or NEC.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of permanent facilities.

END OF SECTION
SECTION 01513 - EXHAUST VENTILATION SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

PART 2 - PRODUCTS

EXHAUST MACHINES:

Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Use units that are manufactured and have appropriate UL and efficiency testing. Units that appear to be damaged shall be removed from service immediately. Units shall have a three stage filtration process; first-stage low efficiency for particles 100 µm and larger, second-stage filter for particles down to 5 µm, and the final stage filter (HEPA) capable of removing 99.99% particles at 0.3 µm or larger. Filters shall be new and seated properly within the units.

PART 3 - EXECUTION

GENERAL:

A static negative air pressure of at least -0.02 inches water column shall be maintained at all times in the Work Area enclosure to ensure that contaminated air does not enter non-contaminated areas. Contractor is responsible for all patent requirements related to exhaust and shall provide a continuously operating manometer with alarm to measure static pressure differential. The negative air pressure shall be monitored by an employee of the Contractor or their delegate to prevent loss of negative pressure. The Contractor shall record the manometer readings four times throughout the 8-hour work shift at a minimum. Submit readings as Specified in Section 1300, Submittals.
PREPARATION OF THE WORK AREA:

A. Determining the Ventilation Requirements: Provide fully operational local exhaust systems supplying a minimum of one air change every 15 minutes. Determine the volume in cubic feet of the Work Area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (cfm) for the Work Area by dividing this volume by the air change rate.

B. Ventilation Required (CFM) = Volume of Work Area (cu. ft.)/15 min. Determine Number of Units needed to achieve 15 minute change rate by dividing the ventilation requirement (CFM) above by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters in the machines labeled operating characteristics. Number of Units Needed = Ventilation Requirement (CFM)/ Capacity of Unit with Loaded Filters (CFM).

C. Add one additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

D. Location of Exhaust Units: Locate exhaust unit(s) so that makeup air enters Work Area primarily through decontamination facilities and traverses Work Area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a minimum distance from the worker access opening or other makeup air sources.

E. Place End of Unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape and caulk as required.

F. Vent Exhaust Units to the exterior away from occupied areas unless otherwise authorized in writing by the Designer.

USE OF THE LOCAL EXHAUST SYSTEM:

A. General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit, or voltage and amperage specified by the manufacturer.

B. Testing the System: Test local exhaust system before any asbestos-containing material is wetted or removed. After the Work Area has been prepared, the decontamination facility set up, and the exhaust unit(s) installed, start the unit(s) one at a time.

C. Demonstrate Operation of the local exhaust system to the Air Monitoring Firm and/or Designer including, but not be limited to, the following:

   a. Plastic barriers and sheeting move lightly in toward Work Area,
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b. Curtain of decontamination units move lightly in toward Work Area,

c. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.

d. Use smoke tubes to demonstrate a positive motion of air across all areas in which Work is to be performed.

D. Start exhaust units before beginning Work (before any asbestos-containing material is disturbed). If more than one unit is installed, they should be turned on one at a time, checking the integrity of wall barriers for secure attachment and need for additional support. After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the Work Area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop. Do not shut down local exhaust system during lockdown procedures, unless authorized by the Designer in writing.

E. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and all exhaust units are operating again. At completion of abatement work, allow exhaust units to run as specified under Section 02081, to remove airborne fibers that may have been generated during abatement work and cleanup and purge the Work Area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.

F. Perform shutdown dismantling of the local exhaust system in accordance with procedures outlined in Section 02081- Removal of Asbestos-Containing Materials.

END OF SECTION
SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

RELATED DOCUMENT:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

This section describes the equipment and procedures required for protecting workers against asbestos contamination and other work place hazards except for respiratory.

RELATED WORK SPECIFIED ELSEWHERE:

Respiratory Protection is specified in Section 01562.

WORKER TRAINING:

Train, in accordance with 29 CFR 1926.1101, 40 CFR 763, and SCDHEC R. 61-86.1, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:

- Methods of recognizing asbestos.
- Health effects associated with asbestos.
- Relationship between smoking and asbestos in producing lung cancer.
- Nature of operations that could result in exposure to asbestos.
- Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
  - Engineering controls
  - Work practices
  - Respirators
  - Housekeeping procedures
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-- Hygiene facilities
-- Protective clothing
-- Decontamination procedures
-- Emergency procedures
-- Waste disposal procedures
-- Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
-- Appropriate work practices for the Work
-- Requirements of medical surveillance program
-- Review of 29 CFR 1926
-- Exhaust ventilation systems
-- Work practices including hands on or on-job training
-- Personal decontamination procedures
-- Air monitoring, personnel and area

MEDICAL SURVEILLANCE:

Provide a medical surveillance program and physician's opinion before a respirator is assigned as required by 29 CFR 1910.134 and 29 CFR 1926.103(e)(10). In addition, require that the physician provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.

PART 2 - EQUIPMENT

PROTECTIVE CLOTHING:

A. Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.

B. Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers. Require hard hats to be worn at all times that Work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the Work. Thoroughly clean, decontaminate and bag hats before removing them from the Work Area at the end of the Work.

C. Footwear: Provide foot covers and footwear with non-skid soles, and where required by OSHA, foot protection for all workers. Do not allow this footwear to be removed from the Work Area for any reason other than disposal of contaminated waste or transfer to another asbestos Work Area.

D. Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Goggles will not be worn with full face respirators.
E. Gloves: Provide work gloves.

ADDITIONAL PROTECTIVE EQUIPMENT:

Disposable coveralls, head covers, and footwear covers, and PAPR respiratory protection shall be provided by the Contractor for the Owner, Designer, and other authorized representatives who may inspect the job site.

Provide all workers with appropriate tool tethers to prevent injury to workers below.

PART 3 - EXECUTION

GENERAL:

Contractor shall assume sole responsibility and provide worker protection as required by the most stringent OSHA standards applicable to the Work.

Each time the Work Area is entered, all workers shall wear a disposable whole body suit. The worker may wear this suit over their street cloths during non-friable removals.

DECONTAMINATION PROCEDURES:

Require all workers to adhere to the following personal decontamination procedures at a minimum whenever they leave the Work Area:

Regulated removals utilizing a full decontamination unit:

- When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.

- Still wearing respirators, proceed to showers. Showering is mandatory. Thoroughly wet body. Remove respirator and dispose of filter properly. Carefully wash respirator facepiece. Shower completely with soap and water. Rinse shower walls and floor prior to exit.

- Proceed from shower to changing room and change into street clothes or into new disposable work items.
WITHIN WORK AREA:

Workers MAY NOT eat, drink, smoke, apply cosmetics, chew gum or use tobacco products in the Work Area. To eat, chew, apply cosmetics, drink or smoke, workers shall follow the procedure described above, then dress in street clothes before entering the non-Work Areas of the building.

END OF SECTION
SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

RELATED DOCUMENTS:

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Instruct and train each worker involved in abatement in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber level encountered in the work place.

STANDARDS:

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.


NIOSH - National Institute for Occupational Safety and Health.
PART 2 - PRODUCTS

Provide respirators and filters approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers.

PART 3 - EXECUTION

GENERAL:

Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. Furnish personnel engaged in the removal and demolition of asbestos materials with supplied air respirators (continuous flow or pressure demand class), or PAPR, until the TWA is established or a negative exposure assessment is furnished.

After the TWA is established, the Contractor shall furnish respirators as required. Respirators offer varying degrees of protection, generally determined by the type of respirator. The assigned protection factor (APF) indicates the expected degree of protection provided by the type of respirator. A respirator with a protection factor of 10 will provide protection to a properly fit the wearer in air concentrations up to 10 times the Permissible Exposure Limit (PEL).

Employers must use the assigned protection factors listed in Table 1 to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

<table>
<thead>
<tr>
<th>Type of respirator, 1, 2</th>
<th>Quarter mask</th>
<th>Half mask</th>
<th>Full facepiece</th>
<th>Helmet/hood</th>
<th>Loose-fitting facepiece</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air-Purifying Respirator</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Powered Air-Purifying Respirator (PAPR)</td>
<td></td>
<td>50</td>
<td>1,000</td>
<td>25/1,000</td>
<td>25</td>
</tr>
<tr>
<td>3. Supplied-Air Respirator (SAR) or Airline Respirator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Demand mode</td>
<td></td>
<td>10</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Continuous flow mode</td>
<td></td>
<td>50</td>
<td>1,000</td>
<td>25/1,000</td>
<td>25</td>
</tr>
<tr>
<td>• Pressure-demand or other positive-pressure mode</td>
<td></td>
<td>50</td>
<td>1,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for
use at lower concentrations of that substance, or when required respirator use is independent of concentration.

2 The assigned protection factors in Table 1 are only effective when the employer implements a continuing, effective respirator program as required by this section (29 CFR 1910.134), including training, fit testing, maintenance, and use requirements.

3 This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

4 The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

5 These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by 29 CFR 1910 subpart Z, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by 29 CFR 1910.134 (d)(2)(ii).

Air Systems Monitor: Continuously monitor the air system operation including compressor operation, filter system operation, and all warning and monitoring devices at all times that system is in operation. Assign an individual trained in the operation and maintenance of the system to provide this monitoring.
SECTION 01563 - DECONTAMINATION UNITS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

Require that the Personnel Decontamination Unit be the only means of ingress and egress for the Work Area. Require that all materials exit the Work Area through the Equipment Decontamination Unit.

SUBMITTALS:

Before Start of Work submit written description and/or sketch of Personnel and Equipment Decontamination Units as specified in Section 01300.

PART 2 - PRODUCTS

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6 mils thick, clear, or frosted.

B. Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mils thick, or frosted.

C. Duct Tape: Provide duct tape in 2 or 3 inch widths, with an adhesive specifically formulated to stick tenaciously to sheet polyethylene.

D. Shower Pan: Provide one piece waterproof shower pan.

E. Shower Walls: Provide walls fabricated from rigid, impervious, waterproof material. Structurally support as necessary for stability.

F. Shower Head and Controls: Provide a factory made shower head. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

G. Filters: Provide filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposal
dual filter elements with the primary filter allowing 20 microns and smaller and secondary to pass particles 5 microns and smaller.

H. Shower Stall: For Wash Down Station, provide leak tight shower enclosure with integrated drain pan. Structurally support as necessary for stability.

I. Sump Pump: Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.

PART 3 - EXECUTION

GENERAL

PERSONNEL DECONTAMINATION UNIT

A. Provide a Personnel Decontamination Unit consisting of a serial arrangement of the following connected rooms or spaces: Changing Room, Airlock, Shower Room, Airlock, Equipment Room. An example illustration is provided below.
B. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit. Provide temporary lighting within decontamination units as necessary to reach a lighting level of 100 foot candles.

C. Changing Room (Clean Room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing. Construct using polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building. Locate so that access to Work Area from Changing Room is through Shower Room. Separate Changing Room from the building by a sheet polyethylene flapped doorway.

1) Require workers to remove street clothes in this room, dress in clean disposable coveralls, and on respiratory protection equipment. Do not allow asbestos-contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked (or with a bathing suit as described in Section 01560) from the showers.

2) An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workmen may enter the Changing Room directly from the Shower Room. Protect all surfaces of room with sheet plastic. Authorization for this must be obtained from the Owner in writing prior to start of construction.

3) Maintain floor of Changing Room dry and clean at all times. Do not allow overflow water from shower to wet floor in the Changing Room.

4) Damp wipe all surfaces twice after each shift change with a disinfectant solution.

5) Provide a continuously adequate supply of disposable bath towels.

6) Provide posted information for all emergency phone numbers and procedures.

7) Provide one storage facility per employee.

D. Shower Room: Provide a completely water tight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area undressing in the Equipment Room.

E. Construct room by providing a shower pan and two shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.

1) Separate this room from the rest of the building with air tight walls fabricated of 6 mil polyethylene.

2) Separate this room from the Changing and Equipment Rooms with airlocks fabricated of 6 mil polyethylene, at least three feet wide. Two airlocks are required, one between the Shower and Equipment Room, and one between the Shower and Changing Room.

3) Provide splash-proof entrances to Changing and Equipment Rooms.
F. Provide shower head and controls.
G. Provide temporary extensions of existing hot and cold water and drainage as necessary for a complete and operable shower.

H. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.

I. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

J. Arrange shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or out-side of the Work Area.

K. Provide flexible shower head.

L. Pump waste to drain or to storage for disposal. If pumped to drain, provide 20 micron and 5 micron waste water filters in line to drain or waste water storage. Change filters daily or more often if necessary. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan.

M. Provide Hose Bib.

N. Equipment Room (Contaminated Area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers. Separate this room from the Work Area by a curtained doorway consisting of three sheets of overlapping 6 mil polyethylene sheeting. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet on the top and left side. All sheets have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.

O. Work Area: Separate Work Area from the Equipment Room by poly-ethylene barriers. If the airborne asbestos level in the Work Area is expected to be high, as in dry removal, add an inter-mediate cleaning space between the Equipment Room and the Work Area. Damp wipe clean all surfaces after each shift change. Provide one additional floor layer of 6 mil polyethylene per shift change and remove contaminated layer after each shift.
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P. Airlocks: Airlocks are small rooms in the decontamination area, at least 3 feet wide and three feet deep, separated from the rest of the Work Area by at least 6 mil polyethylene walls. Airlocks must be placed between the Equipment Room and the Shower and between the shower and the Change Room. Each has two doors (Z-flaps) and in no case shall each of these doors be opened at the same time.

Q. Construction:

1) Walls and Ceiling: Construct air tight walls and ceiling using two layers polyethylene sheeting, at least 4 mil in thickness. Attach to existing building components or a temporary framework.
2) Floors: Use two layers (minimum) of 6 mil polyethylene sheeting to cover floors in the Equipment, Shower (underneath shower pan), and Changing Rooms. Provide an additional layer in the Equipment Room for every shift change expected.
3) Roll one layer of plastic from Equipment Room into Work Area after each shift change. Provide a minimum of two layers of plastic at all times. Use only clear plastic to cover floors.
4) Doors: Fabricate from three overlapping sheets (Z-Flaps) with openings a minimum of three feet wide. Configure so that sheeting overlaps adjacent surfaces. Sheets shall close after being released. Put arrows on sheets to indicate direction of overlap and travel. Provide a minimum length of three feet between entrance and exit of any room or airlock.
5) If the decontamination area is located on the exterior of a facility or within an area requiring abatement over the unit, construct the decontamination unit(s) with a minimum 1/4” plywood or acceptable solid construction for all exterior surfaces.
6) Visual Barrier: Where the decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/3” thick hardboard or 1/4” plywood. Where the solid barrier is provided, sheeting need not be opaque.

R. Electrical: Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits in decontamination unit and particularly any pumps in Shower Room to a ground-fault circuit protection device.
ALTERNATE METHOD OF DECONTAMINATION

Alternate methods for decontamination may be submitted to the Designer and Owner for approval. Do not proceed with any such method(s) without prior written approval of the Designer and Owner.

DECONTAMINATION SEQUENCE

A. Entering Work Area:

1) Worker enters Changing Room and removes street clothing, puts on clean disposable coveralls and respirator, and passes through the Shower Room into the Equipment Room.
2) Any additional clothing and equipment left in Equipment Room needed by the worker in the area shall be put on in the Equipment Room.
3) Worker proceeds to Work Area.

B. Exiting Work Area:

1) Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment (or bathing suit). Extra work clothing may be stored in contaminated end of the Equipment Room. Disposable coveralls are placed in a bag for disposal with other material.
2) The worker then proceeds to the shower, still wearing the respirator, and, using soap, washes off completely, paying special attention to the hair.
3) The worker washes off the respirator in the shower, then pulls it from his face and washes the facepiece to face seal area of the face and the respirator.
4) The worker then washes his hair again.
5) After completion of the shower, the worker removes the wet filters and discards them as contaminated waste, and proceeds to the clean room.
6) The worker then dresses in his street clothes, properly cleans and stores his respirator and exits the decontamination unit. Decontamination procedures shall be followed by all individuals leaving the Work Area.

EQUIPMENT DECONTAMINATION (LOADOUT) UNITS

A. Provide an Equipment Decontamination Unit for work areas over 1000 square feet consisting of a serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

B. Wash Down Station: Provide an enclosed wash down unit located in Work Area just outside Wash Room as an equipment, bag, and container cleaning station.
C. Holding Room: Provide Holding Room as a drop location for tagged asbestos-containing materials passed from the Wash Room. Waste material and equipment will be rebagged here. Construct Holding Room of 2” x 4” wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room. Separate this room from the Wash Room with an airlock as described previously.

D. Clean Room: Provide Clean Room to isolate the Holding Room from the building exterior. Construct Clean Room of 2” x 4” wood (or equivalent) framing and polyethylene sheeting, at least 6 mil in thickness and locate to provide access to the Holding Room from the building exterior. Separate this room from the exterior by a single flap of 6-mil polyethylene sheeting and from the Holding Room by a door as described previously.

E. Equipment or Material: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure:

1) At washdown station, thoroughly wet-clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.
2) When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit, other than the doorway between the Washdown Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.
3) Once inside the Wash Room, wet-clean the bags and/or equipment.
4) When cleaning is complete, pass items into Holding Room. Close all doorways except the doorway between the Holding Room and the Clean Room.
5) Workers from the building exterior enter Holding Area and rebag and remove decontaminated equipment and/or containers for disposal. Waste material may be drummed at this point.
6) Require these workers to wear full protective clothing and wear appropriate respiratory protection.
7) At no time is worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

CLEANING OF DECONTAMINATION UNITS

Clean debris and residue from inside of Decontamination Units on a daily basis. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.
SIGNs

Post an approximately 20 inch by 14 inch manufactured sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101.

Legend

DANGER

ASBESTOS

MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS

AUTHORIZED PERSONNEL ONLY

WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

END OF SECTION
DIVISION 2

SITE WORK
SECTION 02081 - REMOVAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

RELATED WORK SPECIFIED ELSEWHERE:

- Summary of Work is specified in Section 01013.
- Disposal of asbestos containing waste is specified in Section 02084.
- Exhaust Ventilation Systems is specified in Section 01513.
- Decontamination Units is specified in Section 1563.

WORK INCLUDED:

General: The Contractor will perform gross removal of asbestos containing materials. Refer to Section 01013 for the summary of Work required under this section.

SUBMITTALS:

Refer to Section 01300 for information on Submittals required under this section.

PART 2 - PRODUCTS:

A. Contractor must furnish all labor, materials, equipment, and subcontractors necessary for removal and disposal of ACM in a manner consistent with these specifications. These materials include but are not limited to:

1) Polyethylene sheeting (6 mil minimum thicknesses for critical and flooring use).

2) Staples, nails, spray cement, and tape capable of sealing joints and securing polyethylene to all necessary surfaces.

3) Surfactant mixed in recommended proportions.

4) Containers to receive and retain ACM with appropriate labels.

5) Warning signs and labels.

6) Glove bags specifically designed for its application.
7) Encapsulants / Lockdown.

8) Other Materials: All necessary materials for removal and disposal of asbestos in compliance with all applicable codes and regulations, and these specifications.

B. Deliver all materials in the original packages or containers bearing the name of the manufacturer and the brand name.

C. Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.

D. Damaged or deteriorated materials shall not be used and must be removed from the job site. Materials that become contaminated with asbestos must be disposed of in accordance with the applicable regulations.

TOOLS AND EQUIPMENT

A. Provide suitable tools for asbestos removal, including but not limited to scrapers, brushes, razor knives, wrenches, tools for constructing containment and decontamination units, brooms, carts, and safety equipment.

B. Provide suitable air moving and exhaust equipment, including but not limited to:

1) A method for maintaining pressure differential of -0.02 inches of water column inside containment than outside. Refer to Section 01513 for requirements of Local Exhaust System Equipment.

2) HEPA-filtered vacuums.

3) Recording manometers for monitoring the pressure inside containment relative to outside.

C. No equipment shall cause suspension of ACM within work area or discharge of asbestos fibers outside of work area.

D. Transportation: As required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property.
PART 3 - EXECUTION

PREPARATION:

GENERAL - WORK AREAS

A. Work Area: Is the location where asbestos-abatement work occurs. It is a variable of the extent of Work of the contract. For this project a "Work Area" is defined as the area in which asbestos removal is being performed. A "Work Area" is considered contaminated during the Work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-abatement work.

B. Work Practice Variances. Any work practice variance must be approved by the Designer. If the variance request involves work practices which conflict state regulations, the variance must also be approved by the applicable state agency.

C. Critical barriers: All asbestos abatement work involving friable and non-friable ACM shall require the installation of critical barriers at all penetrations to the work area.

D. HVAC and Electrical Shut Down: HVAC systems serving the work area must be either shut down or temporarily capped on all asbestos abatement projects. Electrical systems serving the work area shall be shut down and secured, or special provisions with Owner must be made to ensure the safety of abatement workers while asbestos abatement is performed. All electrical equipment used by Contractor in the work area must be protected by GFI circuits.

E. Pre-Cleaning: When Consultant has determined that friable or damaged ACM have contaminated or potentially contaminated equipment and surfaces in the work area, Contractor must HEPA vacuum and wet-wipe these items before application of protective coating.

F. Polyethylene Sheeting: In general, all fixed objects and architectural surfaces in the work area must be protected from contamination during asbestos removal, or from damage during abatement. Polyethylene sheeting shall be flame retardant when used in areas of hot work.

G. Should the area beyond the Work Area(s) become contaminated with asbestos containing dust or debris as a consequence of the Work, immediately notify Designer, stop all abatement work and clean those areas in accordance regulations and approved procedures. Perform all such required cleaning or decontamination at no additional cost to Owner.
H. Asbestos Abatement Work Will Not Commence Until:

1) Arrangements have been made for disposal of waste at an acceptable site.

2) Appropriate waste containers are onsite.

3) Work Areas and decontamination enclosure systems and parts of the building required to remain in use are effectively segregated.

4) Tools, equipment and material waste receptors are on hand.

5) Proper notification has been made to the appropriate regulatory agency.

6) All other preparatory steps have been taken and applicable notices posted and permits obtained.

7) All worker training has been completed.

8) Work area has been observed by the Owner’s Representative and/or Designer.

WORK AREA PREPARATION

A. WORK AREA PREPARATION FOR FULL CONTAINMENT

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.

2) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

3) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

4) Clean movable objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and remove such objects from work area to a suitable temporary location.
5) Clean fixed objects within the proposed work area using HEPA-filtered vacuums and/or wet cleaning methods as appropriate, and enclosed objects with 6 mil polyethylene sheeting and tape.

6) Clean proposed work areas using HEPA-filtered vacuums and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters must not be used.

7) The Contractor shall thoroughly seal the work area for the duration of the work by completely sealing off all openings and fixtures in the work area, including, but not limited to, heating and ventilation ducts, doorways, corridors, windows, skylights, and lighting, with plastic sheeting taped securely in place. If the Contractor is using sealant materials to fill in small holes or cracks, the material shall have appropriate fire ratings. When isolating the work area along halls, corridors, etc., provide solid plywood barriers with joints sealed and two layers of 6-mil polyethylene on both sides. Entrances and exits from the work area will have air locks and triple barriers of plastic sheeting so that the work area is always closed off by one barrier when workers enter or exit.

8) All wall and flooring surfaces in the work area shall be covered with “true virgin poly” plastic sheeting taped securely in place to protect from water damage (or damage by sealants). Alternatively, “shrink wrap” may be used to create outer containments. Two layers of 6 mil plastic sheeting are required on the floor. No water may be left standing in the floor at the end of the work day. Any costs associated with water damage or damage caused by securing plastic sheeting to areas inside or outside the abatement area shall be the Contractor’s responsibility. Areas in which hot work is performed as part of the abatement, flame resistant polyethylene shall be used. Integrity of these seals shall be regularly checked and maintained by the Contractor.

9) Viewing windows (minimum 24”x24” of Plexiglas construction) shall be installed in multiple locations around the containment where feasible or as directed by the Owner, Designer, or Air Monitoring Firm. Locations shall be selected to provide line of sight to all abatement actions.

10) The Contractor shall set up a work area, loadout area and decontamination area as specified in section 01563. The decontamination facility outside of the work area shall consist of a change room, shower room, and equipment room with airlocks between each room. Any alterations to the designed decontamination facility shall be approved by the Designer.
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11) The Contractor shall establish and mark emergency and fire exits from the work area. Emergency procedures shall have priority over established decontamination entry and exit procedures. Install portable fire extinguishers in compliance with National Fire Protection Association, Standard No. 10, portable extinguishers. A minimum of one (1) ABC dry chemical rated fire extinguisher shall be in the clean room plus one for every 3000 square feet in the work area. Areas involving hot work shall have additional fire extinguishers and a fire watch.

12) A system of HEPA-equipped air filtration devices shall be configured so that a pressure differential is established between the work area and the surrounding area (-0.02” to -0.04” water column) as required in Section 1513. Tests will be made and documented daily to confirm this condition. Additional air filtration devices are provided inside the work space so that the air is changed every 15 minutes. The total air exchange is the exhaust air plus the re-circulated air. A HEPA-equipped air filtration device shall be considered to exhaust 75% of its rated capacity unless the Contractor shows actual test data, no more than 24 hours old, that shows a higher rate, but no higher than the rated exhaust. The pressure differential is maintained at all times after preparation is complete and until the final visual inspection and air tests confirm the area is clean and acceptable for occupancy.

Air shall be exhausted outside the building. Any variations must be approved by the Designer. The exhaust system will be monitored by the Air Monitoring Firm for leaks. The Contractor shall check daily for leaks and log his checks in the bound log book. This includes checks internal to air moving devices.

High Efficiency Particulate Air (HEPA) filter exhaust systems equipped with new HEPA filters shall be used. Verify filters are seated properly and prevent any air by-pass. Exhaust equipment and systems shall comply with ANSI Z9.2-79 and used according to manufacturer’s recommendations.

B. ASBESTOS WORK AREA PREPARATION (NON-FRIABLE MATERIALS & GLOVEBAGS)

1) Post Warning signs and barrier tape in and around work area as required by all applicable regulatory agencies, and restrict access to work area to personnel approved by Contractor or Consultant.
2) Contractor shall establish an equipment room or area that is adjacent to the work area for the decontamination of workers and equipment contaminated with asbestos. The decontamination area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface, and be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area when acceptable by OSHA asbestos regulations.

3) Seal off all openings with critical barriers for interior removals. Critical barriers must be placed on penetrations that include but are not limited to; heating and ventilation ducts, doorways, corridors, and windows, with plastic sheeting taped securely in place.

4) All building ventilation air systems connected to the work area shall remain off and sealed during preparation and until the area has passed final visual inspection and final air sampling.

5) Clean and cover fixed surfaces in the proposed work area with polyethylene sheeting.

6) Provide polyethylene sheeting under materials to be removed. For roofing work, provide polyethylene sheeting at areas around collection bins to prevent soil contamination.

7) Install HEPA-filtered exhaust units in work area for interior removals. A pressure differential is not required.

8) The Contractor shall implement an electrical practice protocol that includes, but is not limited to, lockout and GFCI shutdown as described in OSHA Construction Standard 29 CFR 1926.417. All electrical powered equipment utilized during the project shall have ground-fault protection as described in OSHA Construction Standards. All equipment and wiring shall be in compliance with National Fire Protection Association Standard 70, and the National Electrical Code.

9) Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to the fire code.
ASBESTOS REMOVAL

A. METHOD OF REMOVAL GROSS REMOVAL WITHIN FULL CONTAINMENT

1) Prior to asbestos removal, the Contractor’s equipment, work area and decontamination units will be inspected and approved by the Air Monitoring Firm.

2) The asbestos material shall be sprayed with water containing an appropriate wetting agent (amended water) to enhance penetration. The wetting agent shall be in a concentration recommended by the manufacturer. A fine spray/mist of the amended water shall be applied to reduce fiber release before and during removal of the asbestos material. The material shall be sufficiently saturated to meet the NESHAP requirements referenced in these specifications and to prevent emission of airborne asbestos fibers in excess of the exposure limits prescribed in the OSHA 29 CFR 1926.1101 Standard referenced in these specifications.

3) The asbestos material shall be removed in small sections by two-man teams, on staging platforms when necessary. There shall be a separate water source for each asbestos team in the work area. Before beginning the next section, the material shall be packed while still wet into sealable plastic bags (6-mil minimum) and placed into suitable containers for transport. Bags and containers shall be marked with labels prescribed by the OSHA and NESHAP regulations referenced in these specifications. All material shall be double bagged and the outside bag and container shall be clean before leaving the loadout area.

4) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

5) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Each bag shall be individually sealed and placed in containers, at a minimum, a second bag, suitable for transport to the landfill.

6) All material shall be double bagged, and the outside bag and container shall be clean before leaving the loadout area. Bagged waste shall not accumulate in the work area. Contaminated materials, such as carpet, construction debris, pipe, gridwork, etc., may be wrapped in at least two (2) layers of plastic properly labeled and properly protected from perforations of the plastic (i.e., cardboard, multiple layers of plastic, etc.) as an alternative to using plastic bags. The bags and containers shall be marked with the OSHA label prescribed by the OSHA 29 CFR 1926.1101 Standard referenced in these specifications. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the
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waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

7) All excess water (except shower water) shall be either combined with removed material or other absorptive material and properly disposed of as per EPA regulations, or filtered, using a 5-micron final filter, and disposed in the sanitary sewage system. Contractor shall not place water in storm drains, onto lawns, or into ditches, creeks, streams, rivers or other areas.

B. ASBESTOS REMOVAL (NON-FRIABLE MATERIALS)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Wet nonfriable material with amended water and remove with appropriate equipment. Spray the asbestos material during the removal to maintain a wet condition and minimize asbestos fiber dispersion. The asbestos material shall be removed by means which do not render the material friable or prevent dust from being released during the removal. Do not subject the material to grinding, sanding, chipping or abrading. If the material should become friable, stop work and notify the designer.

3) Remove material in small sections. As it is removed place material in sealable 6 mil polyethylene bags or equivalent and place in appropriately labeled container for transport. Dispose of as specified in Section 02084.

C. ASBESTOS REMOVAL (NON-FRIABLE FLOOR TILE & MASTIC)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Remove binding strips or other restrictive molding from doorways, walls, etc. Clean and dispose of as non-asbestos waste.

3) The asbestos floor tile shall be removed with an infrared heat machine. Torches or open flame devices are prohibited.

4) The asbestos material shall be removed intact by heating the floor tile until it becomes soft and releases from the substrate. Gently pry the tile up without breaking the tile. When the tile is cool, place material in approved containers. Bags and containers shall be marked with labels prescribed by the OSHA and
NESHAP regulations referenced in these specifications. Dispose of as specified elsewhere.

5) All loose asbestos material removed in the work area shall be bagged, sealed, and labeled properly before personnel breaks or end of shift.

6) Remove mastic residue using approved mastic removal solvents. Use solvents in accordance with manufacturers’ instructions. Provide worker protection as required by safety data sheet (SDS) for any material used. Ensure solvent does not interfere with adherence with new flooring materials.

7) Mop floor with removal solvent as required by manufacturer’s directions as required to completely remove all residue of mastic. No buffing machines shall be used.

8) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). Dispose of as specified in Section 02084.

D. ASBESTOS REMOVAL (GLOVE BAG)

1) Prior to asbestos removal, the Contractors equipment, work area and decontamination units will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Install glove bag according to manufacturer’s recommendations, and in accordance with 29 CFR 1926.1101.

3) If pipe is removed with ACM in place, wet material with amended water and wrap pipe with two separate layers of 6 mil polyethylene. Install glove bag(s) in location(s) where pipe is to be cut and removed ACM. Seal exposed ends prior to cutting.

4) Remove ACM in small sections. Lower the insulation carefully in the bottom of the glove bag. Do not drop material. One glove bag must be used for each section of ACM to be removed. Sliding or re-use of a single glove bag is prohibited. Use appropriately sized bag for the dimensions of the material to be removed.

5) Prior to removal of the glove bag, ensure that all surfaces from which asbestos has been removed are clean of all visible material, and that the upper portion of the bag is clean of all visible waste. Spray all surfaces and tools in the glove bag with amended water. Wipe all sections of pipe with rag or appropriate material.
6) Use appropriate encapsulant on all surfaces inside the bag. Cover exposed insulation remaining on pipe with wettable fiberglass or other suitable material. Duct tape is not suitable.

7) Place tools inside sleeves of glove bag and isolate from interior of glove bag. Collapse bag using HEPA-filtered vacuum. Squeeze and twist bag at mid-level to isolate waste from upper portion of bag. Seal bag with duct tape. Vacuum the unsealed upper portion. Cut the glove bag along the top and sides, then remove from pipe. Cut off isolated sleeves containing any tools or supplies from the bag and place in bucket of water. Clean the tools in equipment room of decontamination area.

8) Place bag in appropriately labeled container for transport. In addition to the OSHA labeling requirements, all containers shall be labeled with the name of the waste generator and the location at which the waste was generated. Dispose of as specified in Section 02084.

9) All plastic sheeting, tape, cleaning material, clothing, and all other disposable material or items used in the work area shall be packed into sealable plastic bags (6-mil minimum).

E. ASBESTOS REMOVAL (ROOFING)

1) Prior to asbestos removal, the Contractors equipment and work area will be reviewed by the Contractor’s Onsite Supervisor to ensure compliance with regulations.

2) Install critical barriers over all openings into building, adjacent buildings, or equipment within 30 feet of the work

3) Do not sand, abrade or grind roofing materials. Carry out all roofing removal in a manner that will minimize pulverizing, breaking or abrading of involved materials.
4) Use Manual methods which do not render roofing material "non-intact." These include the use of spud, spade, flat-blade or slicing tools, such as axes, mattocks, pry bars, spud bars, crow bars, shovels, flat-blade knives, and utility knives, to slice, cut, strip-off, shear-under, or pry up the material.

5) Use wet methods during removal, unless wet methods are not feasible or will create safety hazards.

6) Do not drop or throw ACM that has been removed from a roof to the ground. Either carry or pass the ACM to the ground by hand, or lower it to the ground via covered, dust-tight chute, crane or hoist.

7) Upon being lowered transfer unwrapped material to a closed receptacle in such manner so as to preclude the dispersion of dust. Dispose of as specified in Section 02084.

INSPECTIONS OF THE WORK AREA DURING ABATEMENT

A. The Air Monitoring Firm/Air Monitor must carry out inspections during the project to confirm that the means and methods of abatement conform to specified procedures. On a large asbestos abatement project, it is likely that work will proceed in phases through several areas. Consider each location isolated from another as an independent area, and inspect it as work is completed. Visual inspection activities must keep pace with the work progress and sequence so that the work in one area does not risk contaminating areas still undergoing preparation, or areas that have already been cleaned, inspected, and released. The following is required at a minimum:

a. Barriers of plastic sheeting, plywood, or equivalent materials should isolate the regulated areas, and should be left in place and intact throughout the work period. Closely inspect tears in the plastic floor covering prior to their being mended to see if any debris or water has leaked through to the surface below, particularly if carpeting is underneath. The integrity of the decontamination areas for personnel and equipment must be maintained throughout the work. Document inspections in the daily field notes and submit to the Designer weekly.

b. Visually observe the removed material and contaminated water must not be allowed to accumulate inside the regulated area, but must be bagged or otherwise collected in water-tight containers as soon as practicable. Monitor the perimeter of the regulated area from inside and outside the isolation barriers. If the duct tape sealing the plastic sheeting is allowed to become wet, it may loosen and allow contaminated water and debris to run under the barriers to areas outside the regulated area. Similarly, the decontamination area must be kept strictly clean of any visible dust or debris. Document inspections in the daily field notes and submit to the Designer weekly.
c. Negative pressure ventilation devices should be in continual operations in a regulated area throughout the period of abatement work. Record the readings on negative pressure monitoring devices on a regular or continuous basis for comparison to the required pressure differential. Readings shall be collected at a minimum of four times during every eight-hour work shift. For work shifts exceeding eight hours, readings shall be collected every two hours. Document inspections in the daily field notes and submit to the Designer weekly.

d. Visually observe the containerized waste is properly labeled, is in good condition, and is not leaking. Additionally, observe the waste container is locked at all times unless actively loading.

B. The Abatement Contractor shall also conduct routine inspections of the work area. At a minimum the above inspections listed above, independent of the Air Monitor shall be conducted. Document inspections in the daily field notes and submit to the Designer weekly.

FINAL INSPECTIONS AND CLEARANCE TESTING

A. The final visual inspection shall be performed in general accordance with ASTM E1368-14, Section 8.4, Inspection at the Conclusion of the Project. If the Air Monitoring Firm or Designer finds visible accumulations of asbestos debris in the work area after the abatement, Contractor shall repeat wet-cleaning until work area is in compliance, at Contractor’s expense. All repeat visual inspections and air monitoring will be conducted only after all surfaces are dry. This shall be at the Contractor’s expense. Clearance monitoring shall not commence until the work area is clean and dry.

B. When an inspection by the Air Monitoring Firm or Designer in the presence of Contractor determines that the area is free of accumulations of dust and visible debris, a tinted lockdown encapsulant may be applied prior to final air testing. Section 09805 outlines additional details.

C. Only critical barriers and negative air exhaust units shall remain in the work area prior to initiating final clearance. The Air Monitoring Firm will, for this project, test final air quality clearance utilizing aggressive (for contained areas) or static methods (for glovebag removals) coupled with TEM analysis, upon notice and confirmation from Contractor that Work Areas and all other decontaminated and cleaned areas are ready. Sampling shall not begin until no visible water remains in work area. Sufficient time shall be allowed by the contractor for surfaces to dry. A minimum of 5 samples in each work area are required. Each sample shall have a minimum volume of 1,200 L of air. A clearance criterion of less than seventy (70) structures per millimeter squared (s/mm²) is required for TEM analysis.
D. Reclean at Contractor's expense all areas which do not comply with the standard of cleaning for final clearance. Continue cleaning until the specified final air quality clearance level is achieved. Contractor shall bear cost of all follow-up test(s) and air monitoring necessary during subsequent cleaning necessitated by the failure of the air tests to meet the specified final clearance level. Owner will deduct the cost of such follow-up test(s) and air monitoring from whatever monies remain due to the Contractor.

E. Following acceptance of clearance level test results and after Testing Laboratory determines Work Area(s) to be visually decontaminated, the Contractor shall dismantle decontamination enclosure systems and thoroughly wet clean immediate areas. The Contractor shall dispose of debris, used cleaning materials, unsalvageable materials used for sturdy barriers, and any other remaining materials. Consider the materials as contaminated and dispose of as specified in Section 02084.

SITEWORK COMPLETION

Asbestos abatement work is complete upon meeting the Work Area clearance criteria and fulfilling the following:

A. Remove all equipment, materials, debris from the Work site.

B. Remove all residue from adhesives used. Damage to furnishings or equipment during construction activities shall be restored to existing condition or better at the expense of the Contractor.

C. Dispose of all asbestos containing waste material as specified in Section 02084.

END OF SECTION
SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

RELATED DOCUMENTS:

General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this section.

DISPOSAL:

Asbestos-containing waste material and debris which is packaged in accordance with the provisions of this specification may be disposed of at designated sanitary landfills when certain precautions are taken.

Notice and Permit from Appropriate State and/or Local Agencies.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

GENERAL:

Remove sealed and labeled containers of contaminated material and wastes and dispose of accordingly in approved landfill as follows:

A. Notify Owner and/or Designer not less than 48 hours, prior to the proposed time of removing and delivery of contaminated waste to the landfill. The Owner and/or Designer may elect to observe this operation and provide photo documentation.

B. All containers (bags, drums, wrapped components) are labeled so that labels have the appearance of or are designed in accordance with OSHA 29 CFR 1926.1101, August 10, 1994, as amended, and any subsequent amendments and editions, and EPA 40 CFR 61.150, November 20, 1990, as amended, and any subsequent amendments and editions.

C. Containers shall be non-porous. The use of “Gaylord” type cardboard containers is not permitted to transport regulated waste on this project.

D. Asbestos waste must be transported and disposed of in a manner that will not permit the release of asbestos fibers into the air.
E. The cargo area of the transport vehicle shall be free of debris and lined with 6-mil polyethylene sheeting. Floor sheeting shall be installed first and shall extend up the side walls at least 12 inches and shall be taped securely into place. Wall sheeting shall overlap by at least six inches and be taped into place. Ceiling sheeting shall extend down the side of the walls at least six inches and be taped into place.

F. If asbestos waste is transported exclusively in leak-tight clean drums, then polyethylene sheeting is not required.

G. Drums, bags and wrapped components that have been removed from the work area shall be loaded into an appropriate vehicle for transportation.

H. Any debris or residue observed on containers or surfaces outside of the work area resulting from abatement activities shall immediately be cleaned using wet methods and vacuum equipment with a HEPA filter.

I. Containers shall be carefully placed and not thrown into the truck cargo area. Drums shall be placed on a level surface in the cargo area and packed tightly or blocked and braced to prevent shifting and tipping. Large structural components shall be secured to prevent shifting.

J. Asbestos waste shall be transported directly to an approved landfill and shall not be stored at a location other than the abatement site.

K. Metal dumpsters or containers in which asbestos waste is temporarily stored at the abatement site shall be lined with 6-mil polyethylene sheeting to prevent contamination, and shall have doors and tops. The doors and tops shall be closed and locked except during loading or unloading asbestos waste.

L. Metal dumpsters or containers used for waste storage shall be labeled in accordance with OSHA 29 CFR 1926.1101, August 10. 1994 as amended, and any subsequent amendments and additions.

M. Bags shall be free of splits, rips and tears, and shall be carefully placed, not thrown, into the transport vehicle.

N. The vehicle used to transport asbestos wastes shall be labeled in accordance with 40 CFR 61.149(d)(1)(i,ii,and iii) as amended, and any subsequent amendments and editions.

O. Upon reaching the landfill, vehicles shall approach the dump location as closely as possible to unload asbestos waste.
P. Bags, drums and wrapped components shall be inspected when unloaded at the disposal site. Material in damaged containers shall be rewrapped, or shall be repacked in empty drums or bags.

Q. Waste containers shall be placed on the ground at the disposal site, not dropped or thrown out.

R. Following the removal of all containerized waste, polyethylene sheeting shall be removed and discarded in bags or drums along with contaminated cleaning materials and protective clothing.

S. After the asbestos waste has been unloaded, the truck cargo area, including the floor, walls and ceiling, shall be decontaminated using wet methods or a vacuum equipped with a HEPA filter until no visible residues remain.

T. A waste shipment record shall be used and shall include the names of the facility owner, contractor and disposal site, the estimated quantity of asbestos waste, and the type and number of containers used. Each time the material changes custody, the record shall be signed by the persons receiving the waste. If a separate hauler is used, the hauler’s name, address, telephone number and the driver’s signature shall also appear on the record.

U. Commercial rental vehicles shall not be used to transport any asbestos, asbestos-containing, or asbestos-containing waste.

END OF SECTION
SECTION 09805 – LOCKDOWN PROCEDURES

PART 1 - GENERAL

General provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to Work of this section.

DESCRIPTION OF WORK:

The Work includes lockdown encapsulation of substrates during decontamination procedures as outlined in Section 02081. Contractor must spot test and ensure encapsulant compatibility with future finishes such as paint, wall paper, etc. on all building substrates.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including label analysis and application instructions for each material proposed for use.

Installation Instructions: Submit manufacturer's installation instruction with specific project requirements noted.

Performance Warrantee: Submit manufacturer's performance guarantee.

Certification: Submit written approval of entity installing the encapsulant from encapsulant manufacturer.

Safety Data Sheet: Submit the Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant and encapsulating material proposed for use on the Work. Include a separate attachment for each sheet INDICATING the specific worker protective equipment proposed for use with the material indicated.

DELIVERY AND STORAGE: Deliver materials to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

- Name or title of material
- Manufacturer's stock number and date of manufacture
- Manufacturer's name
- Thinning instructions
- Application instructions

Deliver materials together with a copy of the Safety Data Sheet for the material.
JOB CONDITIONS: Apply encapsulating materials only when environmental conditions in the Work Area are as required by the manufacturer's instructions and compatibility with planned paint finished are assured.

PART 2 - PRODUCTS

Encapsulants: Provide lockdown type encapsulants specifically designed for binding and adhesion of trace asbestos contamination after asbestos removal. The lockdown type encapsulant shall be tinted with a contrasting color to the work area to verify coverage.

Fire Safety: Use only materials that have a flame spread index of less than twenty-five, when dry, when tested in accordance with ASTM E-84.

PART 3 - EXECUTION:

GENERAL:

Prior to applying any encapsulating material, ensure that application of the sealer will not cause the base material to fail and allow the sealed material to fall of its own weight or separate from the substrate. Should Contractor doubt the ability of the substrate to support the sealant, request direction from the Engineer before proceeding with the encapsulating work.

Do Not Commence Application of encapsulating materials until all removal Work within the Work Area has been completed, and the Engineer has completed a visual inspection unless otherwise specified in this document.

WORKER PROTECTION:

Before beginning Work with any material for which a Safety Data sheet has been submitted, provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

In addition to protective breathing equipment required by OSHA requirements or by this specification, use combination organic vapor - HEPA filters when organic solvent based encapsulants are in use.

Apply lockdown encapsulant to the substrates after all asbestos containing material has been removed and the Work Area has undergone final cleaning and finial inspections as specified in Section 02081, accordingly.

Apply encapsulant with an airless spray gun with air pressure and nozzle orifice as recommended by the encapsulant manufacturer.

Apply second coat over first coat in strict conformance with manufacturer’s instructions.
SEALING EXPOSED EDGES:

Seal edges of asbestos containing material exposed by removals up to an inaccessible spot such as a sleeve, wall penetration, etc. with two coats of encapsulant.

Prior to sealing, permit the exposed edges to dry completely to permit penetration of the sealer.

END OF SECTION
APPENDIX
# TABLE 1
## ASBESTOS RESULTS SAMPLE SUMMARY
### WREN MIDDLE SCHOOL
PIENDMONT, SOUTH CAROLINA
TERRACON PROJECT NO. 86197029

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Analysis Method</th>
<th>Analytical Results</th>
<th>Suspect Material Description</th>
<th>Location</th>
<th>Homogeneous Area</th>
<th>Classification</th>
<th>Friable / Non-Friable</th>
<th>Current Condition</th>
<th>Estimated Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>PLM</td>
<td>NAD</td>
<td>2'x4' Birdwing Pattern Ceiling Tile</td>
<td>Throughout</td>
<td>A</td>
<td>Miscellaneous</td>
<td>Friable</td>
<td>Good</td>
<td>25,000 SF</td>
</tr>
<tr>
<td>A2</td>
<td>PLM</td>
<td>NAD</td>
<td>2'x4' Dot Patten Ceiling Tile</td>
<td>Throughout</td>
<td>B</td>
<td>Miscellaneous</td>
<td>Friable</td>
<td>Good</td>
<td>25,000 SF</td>
</tr>
<tr>
<td>A3</td>
<td>PLM</td>
<td>NAD</td>
<td>2'x4' Deep Birdwing Pattern Ceiling Tile</td>
<td>Ductwork Throughout Structure</td>
<td>C</td>
<td>Miscellaneous</td>
<td>Friable</td>
<td>Good</td>
<td>25,000 SF</td>
</tr>
<tr>
<td>B1</td>
<td>PLM</td>
<td>NAD</td>
<td>Yellow Carpet Mastic</td>
<td>Under Carpet in Various Areas</td>
<td>D</td>
<td>Miscellaneous</td>
<td>Non-Friable / Category I Non-Friable</td>
<td>Good</td>
<td>5,500 SF</td>
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<tr>
<td>B2</td>
<td>PLM</td>
<td>NAD</td>
<td>Cove Base Mastic</td>
<td>Associated with Dark Gray Base</td>
<td>E</td>
<td>Miscellaneous</td>
<td>Non-Friable</td>
<td>Good</td>
<td>1,500 SF</td>
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<tr>
<td>B3</td>
<td>PLM</td>
<td>NAD</td>
<td>Drywall and Joint Compound</td>
<td>Office Walls and Infill Walls in Classrooms</td>
<td>F</td>
<td>Miscellaneous / Surfacing</td>
<td>Friable</td>
<td>Good</td>
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</tr>
<tr>
<td>D1</td>
<td>PLM</td>
<td>NAD</td>
<td>Tile - NAD</td>
<td>12&quot; Beige Floor Tile and Black Mastic</td>
<td>G</td>
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<td>Good</td>
<td>850 SF</td>
</tr>
<tr>
<td>D2</td>
<td>PLM</td>
<td>NAD</td>
<td>2'x2' Birdwing Pattern Ceiling Tile</td>
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<td>D3</td>
<td>TEM</td>
<td>NAD</td>
<td>Window Glazing Compound</td>
<td>Interior Windows</td>
<td>I</td>
<td>Miscellaneous</td>
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<td>120 SF</td>
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<tr>
<td>E1</td>
<td>PLM</td>
<td>NAD</td>
<td>3% Chrysotile</td>
<td>Interior Door/ Window Caulking</td>
<td>J</td>
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</tr>
<tr>
<td>E2</td>
<td>PLM</td>
<td>NAD</td>
<td>3% Chrysotile</td>
<td>Interior Door/ Window Caulking</td>
<td>J</td>
<td>Miscellaneous</td>
<td>Category I Non-Friable</td>
<td>Good</td>
<td>~180 Units</td>
</tr>
<tr>
<td>E3</td>
<td>TEM</td>
<td>NAD</td>
<td>3% Chrysotile</td>
<td>Interior Door/ Window Caulking</td>
<td>J</td>
<td>Miscellaneous</td>
<td>Category I Non-Friable</td>
<td>Good</td>
<td>~180 Units</td>
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</table>

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WREN MIDDLE SCHOOL:
PIENDMONT, SOUTH CAROLINA
TERRACON PROJECT NO. 86197029
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Analysis Method</th>
<th>Analytical Results</th>
<th>Suspect Material Description</th>
<th>Location</th>
<th>Homogeneous Area</th>
<th>Classification</th>
<th>Friable / Non-Friable</th>
<th>Current Condition</th>
<th>Estimated Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>PLM</td>
<td>NAD</td>
<td>Caulking at Wood Base Cove</td>
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<td>K</td>
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<td>200 SF</td>
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<tr>
<td>K2</td>
<td>PLM</td>
<td>NAD</td>
<td>Base Cove Mastic</td>
<td>Associated with Gray Base</td>
<td>L</td>
<td>Miscellaneous</td>
<td>Non-Friable</td>
<td>Good</td>
<td>850 SF</td>
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<tr>
<td>K3</td>
<td>TEM</td>
<td>NAD</td>
<td>Exterior Window Glazing Compound</td>
<td>Exterior</td>
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<td>300 SF</td>
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<tr>
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<td>PLM</td>
<td>NAD</td>
<td>N/A</td>
<td>N</td>
<td>N</td>
<td>Miscellaneous</td>
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<td>~110 Units</td>
</tr>
<tr>
<td>L2</td>
<td>PLM</td>
<td>NAD</td>
<td>Exterior Door/Window Caulk</td>
<td>Exterior</td>
<td>O</td>
<td>Surfacing</td>
<td>Friable</td>
<td>Good</td>
<td>500 SF</td>
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<tr>
<td>L3</td>
<td>TEM</td>
<td>NAD</td>
<td>N/A</td>
<td>N</td>
<td>N</td>
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<td>~110 Units</td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>PLM</td>
<td>NAD</td>
<td>N/A</td>
<td>N</td>
<td>N</td>
<td>Miscellaneous</td>
<td>Category I Non-Friable</td>
<td>Good</td>
<td>~110 Units</td>
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<tr>
<td>M2</td>
<td>PLM</td>
<td>NAD</td>
<td>Ceiling Plaster at Entrances and Boiler Room</td>
<td>Exterior</td>
<td>O</td>
<td>Surfacing</td>
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<td>Good</td>
<td>500 SF</td>
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<tr>
<td>M3</td>
<td>TEM</td>
<td>NAD</td>
<td>N/A</td>
<td>N</td>
<td>N</td>
<td>Miscellaneous</td>
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<td>~110 Units</td>
<td></td>
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<tr>
<td>N/A</td>
<td>PLM</td>
<td>From AHERA Book NAD</td>
<td>Plaster</td>
<td>Bathrooms, Kitchen Area</td>
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<tr>
<td>N/A</td>
<td>PLM</td>
<td>From AHERA Book NAD</td>
<td>Thermal System Insulation On Piping</td>
<td>Above Ceilings Throughout on Elbows, Joints, and Tees.</td>
<td>3-6</td>
<td>TSI</td>
<td>Friable</td>
<td>Good</td>
<td>~125 LF</td>
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<tr>
<td>Sample Number</td>
<td>Analysis Method</td>
<td>Analytical Results</td>
<td>Suspect Material Description</td>
<td>Location</td>
<td>Homogeneous Area</td>
<td>Classification</td>
<td>Friable / Non-Friable</td>
<td>Current Condition</td>
<td>Estimated Quantity</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
<td>--------------------------</td>
<td>------------------------------</td>
<td>--------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>N/A</td>
<td>PLM</td>
<td>From AHERA Book 3-7% Chrysotile</td>
<td>Floor Tile and Associated Mastic</td>
<td>Bottom Layer Throughout</td>
<td>8-16</td>
<td>Miscellaneous</td>
<td>Category I Non-Friable</td>
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<td>66,000 SF</td>
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<tr>
<td>N/A</td>
<td>N/A</td>
<td>Assumed to Contain Asbestos</td>
<td>Roofing Materials (will be sampled at a later date)</td>
<td>Roof</td>
<td>P</td>
<td>Miscellaneous</td>
<td>Category I Non-Friable</td>
<td>Good</td>
<td>80,000 SF</td>
</tr>
</tbody>
</table>

Notes:
1) Quantities listed above are estimates to be used for inspection purposes only and should be field-verified for all other uses.

NA - Not Analyzed
NAD - No Asbestos Detected
PLM - Polarized Light Microscopy
TEM - Transmission Electron Microscopy
PACM - Presumed Asbestos Containing Material

SF - square feet
LF - linear feet
CF - cubic feet
**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos % Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMS-A-1</td>
<td>2x4 Birdwing Pattern CT</td>
<td>Gray/White Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>15% Perlite 10% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-A-2</td>
<td>2x4 Birdwing Pattern CT</td>
<td>Gray/White Non-Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>20% Perlite 5% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-A-3</td>
<td>2x4 Birdwing Pattern CT</td>
<td>Gray/White Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>20% Perlite 5% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-B-1</td>
<td>2x4 Dot Pattern CT</td>
<td>Gray/White Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>15% Perlite 10% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-B-2</td>
<td>2x4 Dot Pattern CT</td>
<td>Gray/White Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>15% Perlite 10% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-B-3</td>
<td>2x4 Deep Birdwing Pattern CT</td>
<td>Gray/White Fibrous Homogeneous</td>
<td>60% Cellulose 15% Min. Wool</td>
<td>15% Perlite 10% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-C-1</td>
<td>2x4 Deep Birdwing Pattern CT</td>
<td>Tan/White Fibrous Homogeneous</td>
<td>40% Cellulose 30% Min. Wool</td>
<td>5% Perlite 25% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-C-2</td>
<td>2x4 Deep Birdwing Pattern CT</td>
<td>Tan/White Fibrous Homogeneous</td>
<td>40% Cellulose 30% Min. Wool</td>
<td>5% Perlite 25% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-C-3</td>
<td>2x4 Deep Birdwing Pattern CT</td>
<td>Tan/White Fibrous Homogeneous</td>
<td>50% Cellulose 30% Min. Wool</td>
<td>10% Perlite 10% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-D-1</td>
<td>Yellow Carpet Mastic</td>
<td>Yellow Non-Fibrous Homogeneous</td>
<td>2% Cellulose 30% Min. Wool</td>
<td>5% Quartz 5% Ca Carbonate 88% Non-fibrous (Other)</td>
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<tr>
<td>WMS-D-2</td>
<td>Yellow Carpet Mastic</td>
<td>Yellow Non-Fibrous Homogeneous</td>
<td>2% Cellulose 30% Min. Wool</td>
<td>5% Quartz 5% Ca Carbonate 88% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-E-1</td>
<td>Cove Base Mastic</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>&lt;1% Synthetic</td>
<td>100% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-E-2</td>
<td>Cove Base Mastic</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>100% Non-fibrous (Other)</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>WMS-F-1-Drywall</td>
<td>DW/JC</td>
<td>Gray Fibrous Homogeneous</td>
<td>10% Cellulose</td>
<td>90% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-1-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>40% Ca Carbonate 60% Non-fibrous (Other)</td>
<td>None Detected</td>
<td></td>
</tr>
<tr>
<td>WMS-F-1-Tape</td>
<td>DW/JC</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>99% Cellulose</td>
<td>1% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
</tbody>
</table>
# Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous (Type)</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMS-F-2-Drywall</td>
<td>DW/JC</td>
<td>Gray Fibrous Homogeneous</td>
<td>12% Cellulose</td>
<td>88% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-2-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-3-Drywall</td>
<td>DW/JC</td>
<td>Gray Fibrous Homogeneous</td>
<td>12% Cellulose</td>
<td>88% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-3-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>40% Ca Carbonate</td>
<td>60% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-4-Drywall</td>
<td>DW/JC</td>
<td>Gray Fibrous Homogeneous</td>
<td>10% Cellulose</td>
<td>90% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-F-4-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-5-Drywall</td>
<td>DW/JC</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>5% Cellulose 1% Glass</td>
<td>94% Non-fibrous (Other)</td>
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<tr>
<td>WMS-F-5-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-F-6-Drywall</td>
<td>DW/JC</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>5% Cellulose 1% Glass</td>
<td>94% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-F-6-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-F-7-Drywall</td>
<td>DW/JC</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>10% Cellulose 1% Glass</td>
<td>89% Non-fibrous (Other)</td>
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<tr>
<td>WMS-F-7-Joint Compound</td>
<td>DW/JC</td>
<td>White Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-G-1-Floor Tile</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-G-1-Mastic</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>Black Non-Fibrous Homogeneous</td>
<td>2% Cellulose</td>
<td>98% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-G-2-Floor Tile</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>30% Ca Carbonate</td>
<td>70% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-G-2-Mastic</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>Black Non-Fibrous Homogeneous</td>
<td>2% Cellulose</td>
<td>98% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-H-1</td>
<td>2x2 Birdwing Pattern CT</td>
<td>Gray Fibrous Homogeneous</td>
<td>40% Cellulose 50% Min. Wool</td>
<td>5% Perlite 5% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-H-2</td>
<td>2x2 Birdwing Pattern CT</td>
<td>Gray Fibrous Homogeneous</td>
<td>40% Cellulose 50% Min. Wool</td>
<td>5% Perlite 5% Non-fibrous (Other)</td>
<td>None Detected</td>
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</table>

<table>
<thead>
<tr>
<th>Sample</th>
<th>Description</th>
<th>Appearance</th>
<th>% Fibrous</th>
<th>% Non-Fibrous</th>
<th>Asbestos % Type</th>
</tr>
</thead>
<tbody>
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<td>WMS-H-3</td>
<td>2x2 Birdwing Pattern</td>
<td>Gray/White Fibrous</td>
<td>40% Cellulose</td>
<td>10% Perlite</td>
<td>Non Detected</td>
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<td></td>
<td>CT</td>
<td>Homogeneous</td>
<td>40% Min. Wool</td>
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<tr>
<td>WMS-I-1</td>
<td>Hallway Windows-WGC</td>
<td>Tan</td>
<td>20% Ca Carbonate</td>
<td>80% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td></td>
<td></td>
<td>Non-Fibrous</td>
<td>80% Non-fibrous (Other)</td>
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<tr>
<td>WMS-I-2</td>
<td>Hallway Windows-WGC</td>
<td>Tan</td>
<td>2% Fibrous (Other)</td>
<td>20% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
<td></td>
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<td>Non-Fibrous</td>
<td>78% Non-fibrous (Other)</td>
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<td>WMS-J-1</td>
<td>Hallway Door/ Wood</td>
<td>Tan</td>
<td>15% Ca Carbonate</td>
<td>82% Non-fibrous (Other)</td>
<td>3% Chrysotile</td>
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<td></td>
<td>Caulk</td>
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<td>Non-fibrous (Other)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Homogeneous</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>WMS-J-2</td>
<td>Hallway Door/ Wood</td>
<td>Tan/White</td>
<td>15% Ca Carbonate</td>
<td>85% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
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<td>Caulk</td>
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<td>Non-fibrous (Other)</td>
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<td>Homogeneous</td>
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<td></td>
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<tr>
<td>WMS-K-1</td>
<td>Wood Base Mastic</td>
<td>White</td>
<td>5% Ca Carbonate</td>
<td>95% Non-fibrous (Other)</td>
<td>None Detected</td>
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<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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<tr>
<td>WMS-K-2</td>
<td>Wood Base Mastic</td>
<td>White</td>
<td>15% Ca Carbonate</td>
<td>85% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
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<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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<td></td>
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<tr>
<td>WMS-L-1</td>
<td>Base Cove Mastic</td>
<td>Gray</td>
<td>5% Ca Carbonate</td>
<td>95% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td></td>
<td>(Gray Base)</td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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<tr>
<td>WMS-L-1-M</td>
<td>Base Cove Mastic</td>
<td>Tan</td>
<td>&lt;1% Cellulose</td>
<td>100% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td></td>
<td>(Gray Base)</td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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<tr>
<td>WMS-L-2-Cove Base</td>
<td>Base Cove Mastic (Gray Base)</td>
<td>Gray Non-Fibrous Homogeneous</td>
<td>5% Ca Carbonate</td>
<td>95% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
<td>WMS-L-2-M</td>
<td>Base Cove Mastic (Gray Base)</td>
<td>Tan Non-Fibrous Homogeneous</td>
<td>2% Cellulose</td>
<td>98% Non-fibrous (Other)</td>
<td>None Detected</td>
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<tr>
<td>WMS-M-1</td>
<td>Ext. Windows-WGC</td>
<td>Gray</td>
<td>15% Ca Carbonate</td>
<td>85% Non-fibrous (Other)</td>
<td>None Detected</td>
</tr>
<tr>
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<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMS-M-2</td>
<td>Ext. Windows-WGC</td>
<td>Gray/White</td>
<td>&lt;1% Fibrous (Other)</td>
<td>15% Ca Carbonate</td>
<td>None Detected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMS-N-1</td>
<td>Ext Window/ Door Caulk</td>
<td>Tan</td>
<td>3% Fibrous (Other)</td>
<td>10% Ca Carbonate</td>
<td>None Detected</td>
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<tr>
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<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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<tr>
<td>WMS-N-2</td>
<td>Ext Window/ Door Caulk</td>
<td>Gray/Tan</td>
<td>20% Ca Carbonate</td>
<td>77% Non-fibrous (Other)</td>
<td>3% Chrysotile</td>
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<tr>
<td></td>
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<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMS-0-1</td>
<td>Ceiling Plaster</td>
<td>Gray/White</td>
<td>&lt;1% Fibrous (Other)</td>
<td>5% Ca Carbonate</td>
<td>2% Chrysotile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMS-0-2</td>
<td>Ceiling Plaster</td>
<td>Gray/White</td>
<td>&lt;1% Fibrous (Other)</td>
<td>5% Ca Carbonate</td>
<td>2% Chrysotile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
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</tr>
<tr>
<td>WMS-0-3</td>
<td>Ceiling Plaster</td>
<td>Brown/Gray</td>
<td>&lt;1% Fibrous (Other)</td>
<td>5% Ca Carbonate</td>
<td>2% Chrysotile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Fibrous</td>
<td>Non-fibrous (Other)</td>
<td></td>
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</tr>
</tbody>
</table>
EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC NVLAP Lab Code 200841-0, VA 3333 00312
## Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Appearance</th>
<th>% Matrix Material</th>
<th>% Non-Asbestos Fibers</th>
<th>Asbestos Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>WMS-D-3</td>
<td>Yellow Carpet Mastic</td>
<td>Tan</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>411901689-0041</td>
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<td>Non-Fibrous Homogeneous</td>
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<tr>
<td>WMS-E-3</td>
<td>Cove Base Mastic</td>
<td>Tan</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<td>411901689-0042</td>
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<td>Non-Fibrous Homogeneous</td>
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<tr>
<td>WMS-G-3-Floor Tile</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>White</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<tr>
<td>411901689-0043</td>
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<td>Non-Fibrous Homogeneous</td>
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<tr>
<td>WMS-G-3-Mastic</td>
<td>12&quot; Beige FT w/ Black Mastic</td>
<td>Black</td>
<td>100.0</td>
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<td>411901689-0043A</td>
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<tr>
<td>WMS-I-3</td>
<td>Hallway Windows- WGC</td>
<td>Gray</td>
<td>98.38</td>
<td>0.81 Fibrous_Other</td>
<td>0.81% Chrysotile</td>
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<td>Non-Fibrous Homogeneous</td>
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<tr>
<td>WMS-J-3</td>
<td>Hallway Door/ Wood Caulk</td>
<td>Positive Stop (Not Analyzed)</td>
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<tr>
<td>411901689-0045</td>
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<tr>
<td>WMS-K-3</td>
<td>Wood Base Mastic</td>
<td>White/Green</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<tr>
<td>WMS-L-3-Cove Base</td>
<td>Base Cove Mastic (Gray Base)</td>
<td>Gray</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<td>Base Cove Mastic (Gray Base)</td>
<td>Tan</td>
<td>100.0</td>
<td>None</td>
<td>No Asbestos Detected</td>
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<tr>
<td>411901689-0047A</td>
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<td>WMS-M-3</td>
<td>Ext. Windows- WGC</td>
<td>Gray/White</td>
<td>100.0</td>
<td>&lt;0.1 Fibrous_Other</td>
<td>No Asbestos Detected</td>
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<td>WMS-N-3</td>
<td>Ext. Window/ Door Caulk</td>
<td>Positive Stop (Not Analyzed)</td>
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<td>411901689-0049</td>
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</tbody>
</table>

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 02/26/2019 09:07:33
## Test Report: Asbestos Analysis of Non-Friable Organically Bound Materials by TEM via EPA/600/R-93/116 Section 2.5.5.1

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Description</th>
<th>Appearance</th>
<th>% Matrix Material</th>
<th>% Non-Asbestos Fibers</th>
<th>Asbestos Types</th>
</tr>
</thead>
</table>

### Analyst(s)

- Derrick Young (9)

---

This laboratory is not responsible for % asbestos in total sample when the residue only is submitted for analysis. The above report relates only to the items tested. This report may not be reproduced, except in full, without written approval by EMSL Analytical, Inc. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc. Pineville, NC

Initial report from: 02/26/2019 09:07:33
# Asbestos Bulk Building Material
## Chain of Custody

**EMSL Bill to:**
- [X] Same
- [ ] Different
  *If Bill to is Different note Instructions in Comments*

**Third Party Billing requires written authorization from third party**

**Company:** Terracon Consultants, Inc.
**Street:** 72 Pointe Circle
**City:** Greenville
**State/Province:** SC
**Zip/Postal Code:** 29615
**Telephone #:** 864-292-2901
**Fax #:** 864-292-6361
**Email Address:** jagurrie@terracon.com
**Project Name/Number:** 86197029
**U.S. State Samples Taken:** SC

**PLM - Bulk (reporting limit)**
- [X] PLM EPA 600/R-93/116 (<1%)
- [X] NIOSH 9002 (<1%)
- [X] NY ELAP Method 198.1 (triable in NY)
- [X] NY ELAP Method 198.8 NOB (non-triable-NY)
- [X] Standard Addition Method

**TEM - Bulk**
- [X] TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1
- [X] TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2
- [X] TEM Qualitative via Drop Mount Prep Technique

**Check For Positive Stop – Clearly Identify Homogenous Group**

**Date Sampled:** 2/19/19
**Sampling Name:** GURRI
**Sampling Signature:**

<table>
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<th>HA #</th>
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**Client Sample # (s):**

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**Comments/Special Instructions:**

BillTo: Terracon Consultants, Inc., 10841 S. Redview Rd, Crethar, KS 66061, USA
Attention: Phone: 913-599-8368 Email: Purchase Order.
### Asbestos Bulk Building Material
### Chain of Custody

**EMSL Order Number (Lab Use Only):** 411901689

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information.

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*Comments/Special Instructions:*  
* TSM upon receipt

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EMSL Analytical, Inc.  
10801 Southern Loop Blvd  
Pineville, NC 28134  
PHONE: (704) 525-2205  
FAX: (704) 525-2382  

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OrderID: 411901689
### Asbestos Bulk Building Material

**Chain of Custody**

**EMSL Order Number** (Lab Use Only):

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*Comments/Special Instructions:*

TSM upon receipt

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Page 3 of 3 pages
DRAWINGS
Notes:

Contractor may divide building into sections for work activities. The Contractor shall submit a written plan to define work areas, anticipated decon and loadout areas, and waste container location prior to mobilization to the site.

Flooring. The lower layer of floor tile throughout the school contains asbestos. Due to the layered floor system removal shall be within a negative pressure enclosure (full containment), unless the contractor can demonstrate both layers of floor tile can be removed intact.

TSL. A. Remove and dispose of asbestos-containing TSI. Elbows, fittings, and tees exist throughout the school. Removal shall be within a negative pressure enclosure (full containment) along with other materials or by glovebag.

Ceilings. Remove and dispose of asbestos-containing ceiling plaster at entrances and in the old mechanical room. Removal shall be within a negative pressure enclosure (full containment).

Caulking. Remove and dispose of asbestos-containing gray, black, and white caulking at windows and doors throughout the building (interior and exterior). Polyethylene sheets or other resilient drop cloths or tarps shall be placed on the surfaces inside and outside the base of each component prior to the start of caulking removal. The dimensions of each drop cloth shall be large enough to catch pieces of caulking that may fall or be dislodged from the component during removal and handling.

Roofing. Roofing at the time of writing was not accessed due to occupancy and weather. Sampling will be conducted prior to start. Roofing materials are assumed to contain asbestos until sampling proves otherwise. Provide an alternate cost for removal of roofing materials.
<table>
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<th>Duration</th>
<th>Start</th>
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<th>Task</th>
<th>Duration</th>
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<td>45 days</td>
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<td>Fri 6/28/19</td>
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