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FACILITIES MANAGEMENT

ASBESTOS ABATMENT AT NORTH LAUREL ELEMENTARY SCHOOL, LAUREL, DELAWARE 19956

SITE SPECIFIC SPECIFICATION AT MAIN CORRIDOR CLASSROOMS AND HALLWAY

"NOT FOR BIDDING"

DATE: September 26, 2018

APPROVED
Facilities Management
Doyle Tiller 10/17/2018
Doyle Tiller Date

EECI PROJECT NO.: EECI-092618

PREPARED FOR: Laurel School District
Attention: Dr. Richard Evans, Director of Facilities and Academic Supports
1160 South Central Avenue, Laurel, Delaware 19956

PREPARED BY:

Mr. Anthony E. Konrad, B.S.
State of Delaware AHERA Project Designer # APDR11142017-9
State of Delaware AHERA Building Inspector # AIMPR10302017-3

17605 Nassau Commons Boulevard, Unit D, Lewes, DE 19958
(302) 684-5201, Fax (302) 684-5204, www.envirotechecinc.com

ENVIRONMENTAL CONSULTING, INC.
Providing Environmental Solutions

This is to certify that the State of Delaware, Facilities Management has reviewed this Specification and approves its use for the project listed in this document.

In accordance with Delaware Code, Title 16, Chapter 78, Paragraph 7805 (1)

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956

SITE SPECIFIC SPECIFICATION AT MAIN CORRIDOR CLASSROOMS AND HALLWAY

"NOT FOR BIDDING"

PROJECT NAME: Asbestos Abatement at North Laurel Elementary School, Laurel, Delaware 19956 Main Corridor Classrooms and Hallway.

PROJECT No.: EECI-092618

SIGNATURE: Doyle Tiller **DATE:** 10/17/2018

PRINT NAME: Doyle Tiller
State of Delaware
Division of Facilities Management

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ENGINEER STATEMENT

The attached statement has been prepared to the best of my knowledge from the physical observations to the extent of engineering discipline and from the data supplied by the owner. It is the responsibility of the Contractor to inspect all existing conditions prior to the commencement of the work and also to comply with all the current Local, State, and Federal codes and Environmental regulations during the execution of the work to be performed in associate with this project.

Project Name: 2018 Asbestos Abatement In The Main Corridor Classrooms and Hallway.

Signature: _____ **Date:** 10/5/18

"NOT FOR BIDDING"

CARLTON R. SAVAGE JR. LICENSED No. 16457 DELAWARE PROFESSIONAL ENGINEER

Print Name: _____ **ID #:** 16457

Mr. Carlton Savage, Jr., PE
Delaware Professional Engineer

17605 Nassau Commons Boulevard, Unit D, Lewes, DE 19958
(302) 684-5201, Fax (302) 684-5204, www.envirotechecinc.com

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PART I

BID INSTRUCTIONS, CONDITIONS, AND FORMS

"NOT FOR BIDDING"

INSTRUCTION TO BIDDERS

Project: **Asbestos Abatement at North Laurel Elementary School.**
Main Corridor Classrooms and Hallway.

Bids Due: **December 17, 2018 at 1:00 PM (Local Time)**

Address Bids To: Laurel School District
Attention: Dr. Richard Evans
1160 South Central Avenue
Laurel, Delaware 19956

Submit Bids Using One of These Methods: Laurel School District
Attention: Dr. Richard Evans
1160 South Central Avenue
Laurel, Delaware 19956

"NOT FOR BIDDING"

Bid Form: See bid form in this specification.

The Contractor is responsible for submitting their bid by the required deadline and verifying that their bid has been received prior to the due date and time.

Bids must be completed by the Contractor in accordance with all instruction for providing a bid as included in this Specification.

Bids shall remain valid for sixty (30) days from the date of opening. It is the intention of the Laurel School District to award this project on **Monday, December 17, 2018** by the end of business day.

The Laurel School District reserves the right to reject all, or any bid, and to waive any informality or irregularity in any bid received.

The Contractor shall begin the work within ten (10) Calendar Days from the date of Notice to Proceed and shall perform all site work within the time frame specified.

The Contractor and their Subcontractors shall comply with all of the requirements of the Delaware Department of Labor, Delaware Prevailing Wage Rate Regulations. Additionally, the Contractor shall prepare and submit all payroll and time sheet information directly to the Delaware Department of Labor as required and provide a copy to the Owner.

Applications for Payment shall be submitted by the Contractor to the Laurel School District on AIA Documents G702/G703.

At Completion of the project and prior to the release of retainage monies, the Contractor shall submit an affidavit of payment of debts and claims, and affidavit of release of liens (AIA sample documents G706/G706A).

The Contractor awarded the work for this project shall submit revised ten-day notifications to the EPA and State of Delaware Department of Natural Resources and Environmental Control (DNREC) no later than Tuesday, December 18, 2018.

"NOT FOR BIDDING"

INVITATION TO BID

Sealed bids for Laurel School District Contract No. **LSD18nleasbeabate1**, will be received by Laurel School District at 1160 South Central Avenue, Laurel, Delaware 19956 until 1:00 pm local time on December 17, 2018, at which time they will be publicly opened and read aloud in the Conference Room. Bidder bears the risk of late delivery. Any bids received after the stated time will be returned unopened.

Project involves asbestos abatement activities.

A **MANDATORY** Pre-Bid Meeting will be held on November 26, 2018, at 10:00 am at North Laurel Elementary School – 600 Wilson Street, Laurel, Delaware 19956 for the purpose of establishing the listing of subcontractors and to answer questions. Representatives of each party to any Joint Venture must attend this meeting. **ATTENDANCE OF THIS MEETING IS A PREREQUISITE FOR BIDDING ON THIS CONTRACT.**

Sealed bids shall be addressed to the Laurel School District (Attention Dr. Richard Evans), 1160 South Central Avenue, Laurel, Delaware 19956.

The outer envelope should clearly indicate: **"LSD CONTRACT NO. LSD18nleasbeabate1- SEALED BID - DO NOT OPEN."**

Contract documents may be obtained at the mandatory pre bid meeting for $100.00 per set/non-refundable. Checks are to be made payable to "Envirotech Environmental Consulting, Inc.".

Bidders will not be subject to discrimination on the basis of race, creed, color, sex, sexual orientation, gender identity or national origin in consideration of this award, and Minority Business Enterprises, Disadvantaged Business Enterprises, Women-Owned Business Enterprises and Veteran-Owned Business Enterprises will be afforded full opportunity to submit bids on this contract. Each bid must be accompanied by a bid security equivalent to ten percent of the bid amount and all additive alternates.

"NOT FOR BIDDING"

The successful bidder must post a performance bond and payment bond in a sum equal to 100 percent of the contract price upon execution of the contract. The Owner reserves the right to reject any or all bids and to waive any informalities therein. The Owner may extend the time and place for the opening of the bids from that described in the advertisement, with not less than two calendar days notice by certified delivery, facsimile machine or other electronic means to those bidders receiving plans.

END OF ADVERTISEMENT FOR BIDS

Asbestos Abatement at North Laurel Elementary School,
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway
Project No.: EECI-092618

BID FORM

For Bids Due: December 17, 2018

To: **Laurel School District**
Attention: Dr. Richard Evans
1160 South Central Avenue
Laurel, Delaware 19956

Name of Bidder:_____

Delaware Business License No.:_____ **Taxpayer ID No.:** _____
(A copy of Bidder's Delaware Business License must be attached to this form.)

(Other License Nos.): _____

Phone No.: ( ) _____ - _____ **Fax No.:** ( ) _____ - _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

"NOT FOR BIDDING"

$_____

ALTERNATES

There are no work alternates for this project.

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	ADD	DEDUCT
N/A:		

Asbestos Abatement at North Laurel Elementary School,
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway
Project No.: EECI-092618

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for thirty (30) days from the date of opening of bids (60 days for School Districts and Department of Education), and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

"NOT FOR BIDDING"

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

_____
(State of Corporation)

Business Address:_____
_____
_____

Witness: _____

(SEAL)

By: _____
(Authorized Signature)

_____
(Title)

Date: _____

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Affidavit of Employee Drug Testing Program
Bid Security
(Others as Required by Project Manuals)

Asbestos Abatement at North Laurel Elementary School,
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway
Project No.: EECI-092618

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.** This form must be filled out completely with no additions or deletions.

Subcontractor Category	Subcontractor	Address (City & State)	Subcontractors tax payer ID # or Delaware Business license #
1. Personal Air Monitoring			
2. Waste Hauler			

"NOT FOR BIDDING"

Asbestos Abatement at North Laurel Elementary School,
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway
Project No.: EECI-092618

BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date *(to the Office of Management and Budget, Division of Facilities Management)*.

All the terms and conditions of *(Project or Contract Number)* have been thoroughly examined and are understood.

NAME OF BIDDER: _____

AUTHORIZED REPRESENTATIVE (TYPED): _____

AUTHORIZED REPRESENTATIVE (SIGNATURE): _____

TITLE: _____

ADDRESS OF BIDDER: "NOT FOR BIDDING" _____

_____

_____

E-MAIL: _____

PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite, including subcontractors that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

_____

_____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

"NOT FOR BIDDING"

Sworn to and Subscribed before me this _____day of _____ 20_____.

My Commission expires _____. NOTARY PUBLIC _____.

<u>THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.</u>

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____ _____ of _____ in the County of _____ _____ and State of _____ as **Principal**, and _____ _____ of _____ in the County of _____ and State of _____ as **Surety**, legally authorized to do business in the State of Delaware ("**State**"), are held and firmly unto the **State** in the sum of _____ _____ Dollars ($_____), or _____ percent not to exceed _____ _____ Dollars ($_____) of amount of bid on Contract No. _____, to be paid to the **State** for the use and benefit of _____ (***Laurel School District***) for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded **Principal** who has submitted to the _____ (***Laurel School District***) a certain proposal to enter into this coutract for the furnishing of certain material and/or services within the **State**, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the _____ _____ (***Laurel School District***) this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force aud virtue.

"NOT FOR BIDDING"

Sealed with _____ seal and dated this _____day of _____ in the year of our Lord two thousand and _____ (20___).

SEALED, AND DELIVERED IN THE
Presence of

_____
Name of Bidder (Organization)

Corporate Seal

By: _____
Authorized Signature

Attest _____

_____
Title

_____
Name of Surety

Witness:_____

By: _____

_____
Title

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

PERFORMANCE BOND

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____, as principal ("**Principal**"), and _____, a _____ corporation, legally authorized to do business in the State of Delaware, as surety ("**Surety**"), are held and firmly bound unto the _____ ("**Owner**") (***Laurel School District***), in the amount of _____ ($_____), to be paid to **Owner**, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole, firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has been awarded by **Owner** that certain contract known as Contract No. _____ dated the _____ day of _____, 20__ (the "Contract"), which Contract is incorporated herein by reference, shall well and truly provide and furnish all materials, appliances and tools and perform all the work required under and pursuant to the terms and conditions of the Contract and the Contract Documents (as defined in the Contract) or any changes or modifications thereto made as therein provided, shall make good and reimburse **Owner** sufficient funds to pay the costs of completing the Contract that **Owner** may sustain by reason of any failure or default on the part of **Principal**, and shall also indemnify and save harmless **Owner** from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

"NOT FOR BIDDING"

Surety, for value received, hereby stipulates and agrees, if requested to do so by **Owner**, to fully perform and complete the work to be performed under the Contract pursuant to the terms, conditions and covenants thereof, if for any cause **Principal** fails or neglects to so fully perform and complete such work.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of **Surety** and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and **Surety** hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other

transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

_____ By: _____(SEAL)
Name: Name:
Title:

(Corporate Seal)

"NOT FOR BIDDING"

SURETY

Name: _____

Witness or Attest: Address: _____

_____ By: _____ (SEAL)
Name: Name:
Title:

(Corporate Seal)

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

PAYMENT BOND

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____, as principal ("**Principal**"), and _____, a _____ corporation, legally authorized to do business in the State of Delaware, as surety ("**Surety**"), are held and firmly bound unto the _____ ("**Owner**") (***Laurel School District***), in the amount of _____ ($_____), to be paid to **Owner**, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this _____ day of_____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has been awarded by **Owner** that certain contract known as Contract No. _____ dated the _____ day of _____, 20__ (the "Contract"), which Contract is incorporated herein by reference, shall well and truly pay all and every person furnishing materials or performing labor or service in and about the performance of the work under the Contract, all and every sums of money due him, her, them or any of them, for all such materials, labor and service for which **Principal** is liable, shall make good and reimburse **Owner** sufficient funds to pay such costs in the completion of the Contract as **Owner** may sustain by reason of any failure or default on the part of **Principal**, and shall also indemnify and save harmless **Owner** from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

"NOT FOR BIDDING"

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of **Surety** and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and **Surety** hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omission or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

_____ By: _____(SEAL)
Name: Name:
Title:

(Corporate Seal)

"NOT FOR BIDDING"

SURETY

Name: _____

Witness or Attest: Address: _____

_____ By: _____(SEAL)
Name: Name:
Title:

(Corporate Seal)

INSTRUCTIONS TO BIDDERS

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"NOT FOR BIDDING"

ARTICLE 1: GENERAL

1.1 DEFINITIONS

1.1.1 Whenever the following terms are used, their intent and meaning shall be interpreted as follows:

1.2 STATE: The State of Delaware.

1.3 AGENCY: Contracting State Agency as noted on cover sheet.

1.4 DESIGNATED OFFICIAL: The agent authorized to act for the Agency.

1.5 BIDDING DOCUMENTS: Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bid, Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the Bid Form (including the Non-collusion Statement), and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, as well as the Drawings, Specifications (Project Manual) and all Addenda issued prior to execution of the Contract.

1.6 CONTRACT DOCUMENTS: The Contract Documents consist of the, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the form of agreement between the Owner and the Contractor, Drawings (if any), Specifications (Project Manual), and all addenda.

"NOT FOR BIDDING"

1.7 AGREEMENT: The form of the Agreement shall be AIA Document A101, Standard Form of Agreement between Owner and Contractor where the basis of payment is a STIPULATED SUM. In the case of conflict between the instructions contained therein and the General Requirements herein, these General Requirements shall prevail.

1.8 GENERAL REQUIREMENTS (or CONDITIONS): General Requirements (or conditions) are instructions pertaining to the Bidding Documents and to contracts in general. They contain, in summary, requirements of laws of the State; policies of the Agency and instructions to bidders.

1.9 SPECIAL PROVISIONS: Special Provisions are specific conditions or requirements peculiar to the bidding documents and to the contract under consideration and are supplemental to the General Requirements. Should the Special Provisions conflict with the General Requirements, the Special Provisions shall prevail.

1.10 ADDENDA: Written or graphic instruments issued by the Owner/Architect prior to the execution of the contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

1.11 BIDDER OR VENDOR: A person or entity who formally submits a Bid for the material or Work contemplated, acting directly or through a duly authorized representative who meets the requirements set forth in the Bidding Documents.

1.12 SUB-BIDDER: A person or entity who submits a Bid to a Bidder for materials or labor, or both for a portion of the Work.

1.13 BID: A complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

1.14 BASE BID: The sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids (if any are required to be stated in the bid).

1.15 ALTERNATE BID (or ALTERNATE): An amount stated in the Bid, where applicable, to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents is accepted.

1.16 UNIT PRICE: An amount stated in the Bid, where applicable, as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

1.17 SURETY: The corporate body which is bound with and for the Contract, or which is liable, and which engages to be responsible for the Contractor's payments of all debts pertaining to and for his acceptable performance of the Work for which he has contracted.

1.18 BIDDER'S DEPOSIT: The security designated in the Bid to be furnished by the Bidder as a guaranty of good faith to enter into a contract with the Agency if the Work to be performed or the material or equipment to be furnished is awarded to him.

1.19 CONTRACT: The written agreement covering the furnishing and delivery of material or work to be performed.

1.20 CONTRACTOR: Any individual, firm or corporation with whom a contract is made by the Agency.

1.21 SUBCONTRACTOR: An individual, partnership or corporation which has a direct contract with a contractor to furnish labor and materials at the job site, or to perform construction labor and furnish material in connection with such labor at the job site.

NOT FOR BIDDING!

1.22 CONTRACT BOND: The approved form of security furnished by the contractor and his surety as a guaranty of good faith on the part of the contractor to execute the work in accordance with the terms of the contract.

ARTICLE 2: BIDDER'S REPRESENTATIONS

2.1 PRE-BID MEETING

2.1.1 A pre-bid meeting for this project will be held at the time and place designated. Attendance at this meeting is a pre-requisite for submitting a Bid, unless this requirement is specifically waived elsewhere in the Bid Documents.

2.2 By submitting a Bid, the Bidder represents that:

2.2.1 The Bidder has read and understands the Bidding Documents and that the Bid is made in accordance therewith.

2.2.2 The Bidder has visited the site, become familiar with existing conditions under which the Work is to be performed, and has correlated the Bidder's his personal observations with the requirements of the proposed Contract Documents.

2.2.3 The Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

2.3 JOINT VENTURE REQUIREMENTS

2.3.1 For Public Works Contracts, each Joint Venturer shall be qualified and capable to complete the Work with their own forces.

2.3.2 Included with the Bid submission, and as a requirement to bid, a copy of the executed Joint Venture Agreement shall be submitted and signed by all Joint Venturers involved.

2.3.3 All required Bid Bonds, Performance Bonds, Material and Labor Payment Bonds must be executed by both Joint Venturers and be placed in both of their names.

2.3.4 All required insurance certificates shall name both Joint Venturers.

2.3.5 Both Joint Venturers shall sign the Bid Form and shall submit a copy of a valid Delaware Business License with their Bid.

2.3.6 Both Joint Venturers shall include their Federal E.I. Number with the Bid.

2.3.7 In the event of a mandatory Pre-bid Meeting, each Joint Venturer shall have a representative in attendance.

2.3.8 Due to exceptional circumstances and for good cause shown, one or more of these provisions may be waived at the discretion of the State.

2.4 ASSIGNMENT OF ANTITRUST CLAIMS

2.4.1 As consideration for the award and execution by the Owner of this contract, the Contractor hereby grants, conveys, sells, assigns and transfers to the State of Delaware all of its right, title and interests in and to all known or unknown causes of action it presently has or may now or hereafter acquire under the antitrust laws of the United States and the State of Delaware, relating to the particular goods or services purchased or acquired by the Owner pursuant to this contract.

"NOT FOR BIDDING"

ARTICLE 3: BIDDING DOCUMENTS

3.1 COPIES OF BID DOCUMENTS

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the Architectural/Engineering firm designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein.

3.1.2 Bidders shall use complete sets of Bidding Documents for preparation of Bids. The issuing Agency nor the Architect assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.1.3 Any errors, inconsistencies or omissions discovered shall be reported to the Architect immediately.

3.1.4 The Agency and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall report any errors, inconsistencies, or ambiguities discovered to the Architect.

3.2.2 Bidders or Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Architect at least seven days prior to the date for receipt of Bids. Interpretations, corrections and changes to the Bidding Documents will be made by written Addendum. Interpretations, corrections, or changes to the Bidding Documents made in any other manner shall not be binding.

3.2.3 The apparent silence of the specifications as to any detail, or the apparent omission from it of detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and only material and workmanship of the first quality are to be used. Proof of specification compliance will be the responsibility of the Bidder.

3.2.4 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all permits, labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

3.2.5 The Owner will bear the costs for all impact and user fees associated with the project.

3.3 SUBSTITUTIONS

"NOT FOR BIDDING"

3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of quality, required function, dimension, and appearance to be met by any proposed substitution. The specification of a particular manufacturer or model number is not intended to be proprietary in any way. Substitutions of products for those named will be considered, providing that the Vendor certifies that the function, quality, and performance characteristics of the material offered is equal or superior to that specified. It shall be the Bidder's responsibility to assure that the proposed substitution will not affect the intent of the design, and to make any installation modifications required to accommodate the substitution.

3.3.2 Requests for substitutions shall be made in writing to the Architect at least ten days prior to the date of the Bid Opening. Such requests shall include a complete description of the proposed substitution, drawings, performance and test data, explanation of required installation modifications due the substitution, and any other information necessary for an evaluation. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval shall be final. The Architect is to notify Owner prior to any approvals.

3.3.3 If the Architect approves a substitution prior to the receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding.

3.3.4 The Architect shall have no obligation to consider any substitutions after the Contract award.

3.4 ADDENDA

3.4.1 Addenda will be mailed or delivered to all who are known by the Architect to have received a complete set of the Bidding Documents.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 No Addenda will be issued later than 4 days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which extends the time or changes the location for the opening of bids.

3.4.4 Each bidder shall ascertain prior to submitting his Bid that they have received all Addenda issued, and shall acknowledge their receipt in their Bid in the appropriate space. Not acknowledging an issued Addenda could be grounds for determining a bid to be non-responsive.

ARTICLE 4: BIDDING PROCEDURES

4.1 PREPARATION OF BIDS

4.1.1 Submit the bids on the Bid Forms included with the Bidding Documents.

4.1.2 Submit the original Bid Form for each bid. Bid Forms may be removed from the project manual for this purpose.

4.1.3 Execute all blanks on the Bid Form in a non-erasable medium (typewriter or manually in ink).

4.1.4 Where so indicated by the makeup on the Bid Form, express sums in both words and figures, in case of discrepancy between the two, the written amount shall govern.

4.1.5 Interlineations, alterations or erasures must be initialed by the signer of the Bid.

"NOT FOR BIDDING"

4.1.6 BID ALL REQUESTED ALTERNATES AND UNIT PRICES, IF ANY. If there is no change in the Base Bid for an Alternate, enter "No Change". The Contractor is responsible for verifying that they have received all addenda issued during the bidding period. Work required by Addenda shall automatically become part of the Contract.

4.1.7 Make no additional stipulations on the Bid Form and do not qualify the Bid in any other manner.

4.1.8 Each copy of the Bid shall include the legal name of the Bidder and a statement whether the Bidder is a sole proprietor, a partnership, a corporation, or any legal entity, and each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached, certifying agent's authority to bind the Bidder.

4.1.9 Bidder shall complete the Non-Collusion Statement form included with the Bid Forms and include it with their Bid.

4.1.10 In the construction of all Public Works projects for the State of Delaware or any agency thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State.

4.1.11 Each bidder shall include in their bid a copy of a valid Delaware Business License.'

4.1.12 Each bidder shall include a signed Affidavit for the Bidder certifying compliance with OMB Regulation 4104 - "Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on "Large Public Works Projects." "Large Public Works" is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

4.2 BID SECURITY

4.2.1 All bids shall be accompanied by a deposit of either a good and sufficient bond to the agency for the benefit of the agency, with corporate surety authorized to do business in this State, the form of the bond and the surety to be approved by the agency, or a security of the bidder assigned to the agency, for a sum equal to at least 10% of the bid plus all add alternates, or in lieu of the bid bond a security deposit in the form of a certified check, bank treasurer's check, cashier's check, money order, or other prior approved secured deposit assigned to the State. The bid bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid plus all add alternates to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. The Bid Bond form used shall be the standard OMB form (attached).

4.2.2 The Agency has the right to retain the bid security of Bidders to whom an award is being considered until either a formal contract has been executed and bonds have been furnished or the specified time has elapsed so the Bids may be withdrawn or all Bids have been rejected.

4.2.3 In the event of any successful Bidder refusing or neglecting to execute a formal contract and bond within 20 days of the awarding of the contract, the bid bond or security deposited by the successful bidder shall be forfeited.

4.3 SUBCONTRACTOR LIST

4.3.1 As required by Delaware Code, Title 29, section 6962(d)(10)b, each Bidder shall submit with their Bid a completed List of Sub-Contractors included with the Bid Form. NAME ONLY ONE SUBCONTRACTOR FOR EACH TRADE. A Bid will be considered non-responsive unless the completed list is included.

"NOT FOR BIDDING"

4.3.2 Provide the Name and Address for each listed subcontractor. Addresses by City, Town or Locality, plus State, will be acceptable.

4.3.3 It is the responsibility of the Contractor to ensure that their Subcontractors are in compliance with the provisions of this law. Also, if a Contractor elects to list themselves as a Subcontractor for any category, they must specifically name themselves on the Bid Form and be able to document their capability to act as Subcontractor in that category in accordance with this law.

4.4 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

4.4.1 During the performance of this contract, the contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, sexual orientation, gender identity or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, creed, sex, color, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

B. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, sex, color, sexual orientation, gender identity or national origin."

4.5 PREVAILING WAGE REQUIREMENT

4.5.1 Wage Provisions: For renovation and new construction projects whose costs exceed the thresholds contained in Delaware Code, Title 29, Section 6960, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.

4.5.2 The employer shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.

4.5.3 The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.

4.5.4 Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

4.6 SUBMISSION OF BIDS

4.6.1 Enclose the Bid, the Bid Security, and any other documents required to be submitted with the Bid in a sealed opaque envelope. Address the envelope to the party receiving the Bids. Identify with the project name, project number, and the Bidder's name and address. If the Bid is sent by mail, enclose the sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof. The State is not responsible for the opening of bids prior to bid opening date and time that are not properly marked.

"NOT FOR BIDDING"

4.6.2 Deposit Bids at the designated location prior to the time and date for receipt of bids indicated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will be marked "LATE BID" and returned.

4.6.3 Bidder assumes full responsibility for timely delivery at location designated for receipt of bids.

4.6.4 Oral, telephonic or telegraphic bids are invalid and will not receive consideration.

4.6.5 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided that they are then fully in compliance with these Instructions to Bidders.

4.7 MODIFICATION OR WITHDRAW OF BIDS

4.7.1 Prior to the closing date for receipt of Bids, a Bidder may withdraw a Bid by personal request and by showing proper identification to the Architect. A request for withdraw by letter or fax, if the Architect is notified in writing prior to receipt of fax, is acceptable. A fax directing a modification in the bid price will render the Bid informal, causing it to be ineligible for consideration of award. Telephone directives for modification of the bid price shall not be permitted and will have no bearing on the submitted proposal in any manner.

4.7.2 Bidders submitting Bids that are late shall be notified as soon as practicable and the bid shall be returned.

4.7.3 A Bid may not be modified, withdrawn or canceled by the Bidder during a thirty (30) day period following the time and date designated for the receipt and opening of Bids, and Bidder so agrees in submitting their Bid. Bids shall be binding for 30 days after the date of the Bid opening.

ARTICLE 5: CONSIDERATION OF BIDS

5.1 OPENING/REJECTION OF BIDS

5.1.1 Unless otherwise stated, Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids will be made available to Bidders.

5.1.2 The Agency shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid Security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

5.1.3 If the Bids are rejected, it will be done within thirty (30) calendar day of the Bid opening.

5.2 COMPARISON OF BIDS

5.2.1 After the Bids have been opened and read, the bid prices will be compared and the result of such comparisons will be made available to the public. Comparisons of the Bids may be based on the Base Bid plus desired Alternates. The Agency shall have the right to accept Alternates in any order or combination.

5.2.2 The Agency reserves the right to waive technicalities, to reject any or all Bids, or any portion thereof, to advertise for new Bids, to proceed to do the Work otherwise, or to abandon the Work, in the judgment of the Agency or its agent(s), it is in the best interest of the State.

"NOT FOR BIDDING"

5.2.3 An increase or decrease in the quantity for any item is not sufficient grounds for an increase or decrease in the Unit Price.

5.2.4 The prices quoted are to be those for which the material will be furnished F.O.B. Job Site and include all charges that may be imposed during the period of the Contract.

5.2.5 No qualifying letter or statements in or attached to the Bid, or separate discounts will be considered in determining the low Bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into Unit Bid Price(s).

5.3 DISQUALIFICATION OF BIDDERS

5.3.1 An agency shall determine that each Bidder on any Public Works Contract is responsible before awarding the Contract. Factors to be considered in determining the responsibility of a Bidder include:

A. The Bidder's financial, physical, personnel or other resources including Subcontracts;

B. The Bidder's record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations of the Prevailing Wage Laws in Delaware or any other state;

C. The Bidder's written safety plan;

D. Whether the Bidder is qualified legally to contract with the State;

E. Whether the Bidder supplied all necessary information concerning its responsibility; and,

F. Any other specific criteria for a particular procurement, which an agency may establish; provided however, that, the criteria be set forth in the Invitation to Bid and is otherwise in conformity with State and/or Federal law.

5.3.2 If an agency determines that a Bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected Bidder within five (5) working days of said determination.

5.3.3 In addition, any one or more of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of their Bid or Bids.

5.3.3.1 More than one Bid for the same Contract from an individual, firm or corporation under the same or different names.

5.3.3.2 Evidence of collusion among Bidders.

5.3.3.3 Unsatisfactory performance record as evidenced by past experience.

5.3.3.4 If the Unit Prices are obviously unbalanced either in excess or below reasonable cost analysis values.

5.3.3.5 If there are any unauthorized additions, interlineation, conditional or alternate bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning.

"NOT FOR BIDDING"

5.3.3.6 If the Bid is not accompanied by the required Bid Security and other data required by the Bidding Documents.

5.3.3.7 If any exceptions or qualifications of the Bid are noted on the Bid Form.

5.4 ACCEPTANCE OF BID AND AWARD OF CONTRACT

5.4.1 A formal Contract shall be executed with the successful Bidder within twenty (20) calendar days after the award of the Contract.

5.4.2 Per Section 6962(d)(13) a., Title 29, Delaware Code, "The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible Bidder, unless the Agency elects to award on the basis of best value, in which case the election to award on the basis of best value shall be stated in the Invitation To Bid."

5.4.3 Each Bid on any Public Works Contract must be deemed responsive by the Agency to be considered for award. A responsive Bid shall conform in all material respects to the requirements and criteria set forth in the Contract Documents and specifications.

5.4.4 The Agency shall have the right to accept Alternates in any order or combination, and to determine the low Bidder on the basis of the sum of the Base Bid, plus accepted Alternates.

5.4.5 The successful Bidder shall execute a formal contract, submit the required Insurance Certificate, and furnish good and sufficient bonds, unless specifically waived in the General Requirements, in accordance with the General Requirement, within twenty (20) days of official notice of contract award. The successful Bidder shall provide, at least two business days prior to contract execution, copies of the Employee Drug Testing Program for the Bidder and all listed Subcontractors. Bonds shall be for the benefit of the Agency with surety in the amount of 100% of the total contract award. Said Bonds shall be conditioned upon the faithful performance of the contract. Bonds shall remain in affect for period of one year after the date of substantial completion.

5.4.6 If the successful Bidder fails to execute the required Contract, Bond and all required information, as aforesaid, within twenty (20) calendar days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or readvertised, as the Agency may decide.

5.4.7 Each bidder shall supply with its bid its taxpayer identification number (i.e., federal employer identification number or social security number) and a copy of its Delaware business license, and should the vendor be awarded a contract, such vendor shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract, the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

NOT FOR BIDDING

5.4.8 The Bid Security shall be returned to the successful Bidder upon the execution of the formal contract. The Bid Securities of unsuccessful bidders shall be returned within thirty (30) calendar days after the opening of the Bids.

ARTICLE 6: POST-BID INFORMATION

6.1 CONTRACTOR'S QUALIFICATION STATEMENT

6.1.1 Bidders to whom award of a Contract is under consideration shall, if requested by the Agency, submit a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a statement has been previously required and submitted.

6.2 BUSINESS DESIGNATION FORM

6.2.1 Successful bidder shall be required to accurately complete an Office of Management and Budget Business Designation Form for Subcontractors.

ARTICLE 7: PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

7.1.1 The cost of furnishing the required Bonds, that are stipulated in the Bidding Documents, shall be included in the Bid.

7.1.2 If the Bidder is required by the Agency to secure a bond from other than the Bidder's usual sources, changes in cost will be adjusted as provide in the Contract Documents.

7.1.3 The Performance and Payment Bond forms used shall be the standard OMB forms (attached).

7.2 TIME OF DELIVERY AND FORM OF BONDS

7.2.1 The bonds shall be dated on or after the date of the Contract.

7.2.2 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix a certified and current copy of the power of attorney.

ARTICLE 8: FORM OF AGREEMENT BETWEEN AGENCY AND CONTRACTOR

8.1 Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

END OF INSTRUCTIONS TO BIDDERS

"NOT FOR BIDDING"

AIA® Document A101™ – 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Laurel School District
1160 South Central Avenue, Laurel, Delaware 19956
Telephone No. (302) 875-6100

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

"NOT FOR BIDDING"

The Architect:
(Name, legal status, address and other information)

Envirotech Environmental Consulting, Inc.
17605 Nassau Commons Boulevard, Unit D, Lewes, Delaware 19958
Telephone No. (302) 684-5201
Fax Number: (302) 684-5204

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

"NOT FOR BIDDING"

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.
(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

The commencement date will be fixed in a notice to proceed.

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than ( ) days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

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User Notes: (1719296595)

The Contractor shall achieve Substantial Completion of the entire Work no later than date specified at the mandatory pre bid meeting.

Portion of Work	Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

Contractor agrees to pay $1,000.00 per calendar day if substantial completion is not achieved on the specified date.

ARTICLE 4 CONTRACT SUM
§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be ($), snbject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

No alternates.

§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit ($0.00)
Radiator Heat Shield		

"NOT FOR BIDDING"

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price

ARTICLE 5 PAYMENTS
§ 5.1 PROGRESS PAYMENTS
§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than ( ) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to

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User Notes: (1719296595)

substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of Five percent (5 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of Five percent (5 %);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

"NOT FOR BIDDING"

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

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ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:
(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

"NOT FOR BIDDING"

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

%

§ 8.3 The Owner's representative:
(Name, address and other information)

Laurel School District
Attention: Dr. Richard Evans
1160 South Central Avenue, Laurel, Delaware 19956

§ 8.4 The Contractor's representative:
(Name, address and other information)

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§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)
2018 Asbestos Abatement at North Laurel Elementary School –
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway.

Section	Title	Date	Pages

"NOT FOR BIDDING"

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

.1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

.2 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid,

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Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond	Limit of liability or bond amount ($0.00)
As per specifications	As per specifications

This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
Dr. Richard Evans, Director of Facilities and Academic Supports	
(Printed name and title)	*(Printed name and title)*

"NOT FOR BIDDING"

Init.
/

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Additions and Deletions Report for
AIA® Document A101™ – 2007

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 10:17:12 on 09/27/2018.

PAGE 1

Laurel School District
1160 South Central Avenue, Laurel, Delaware 19956
Telephone No. (302) 875-6100

...

Envirotech Environmental Consulting, Inc.
17605 Nassau Commons Boulevard, Unit D, Lewes, Delaware 19958
Telephone No. (302) 684-5201
Fax Number: (302) 684-5204

PAGE 2

The commencement date will be fixed in a notice to proceed.

PAGE 3

"NOT FOR BIDDING"

The Contractor shall achieve Substantial Completion of the entire Work no later than date specified at the mandatory pre bid meeting.

...

Contractor agrees to pay $1,000.00 per calendar day if substantial completion is not achieved on the specified date.

...

No alternates.

...

Radiator Heat Shield

PAGE 4

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of Five percent (5 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of Five percent (5 %);

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Laurel School District
Attention: Dr. Richard Evans
1160 South Central Avenue, Laurel, Delaware 19956
PAGE 6

2018 Asbestos Abatement at North Laurel Elementary School –
600 Wilson Street, Laurel, Delaware 19956
Main Corridor Classrooms and Hallway.
PAGE 7

As per specifications	As per specifications

...

Dr. Richard Evans, Director of Facilities and Academic Supports	

"NOT FOR BIDDING"

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Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 10:17:12 on 09/27/2018 under Order No. 5661993423 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A101™ – 2007, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

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AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER:	Laurel School District 1160 South Central Avenue, Laurel, Delaware 19956	PROJECT:	2018 Asbestos Abatement at North Laurel Elementary School - 600 Wilson Street, Laurel, Delaware 19956 Main Corridor Classrooms and Hallway	APPLICATION NO: 001 PERIOD TO: CONTRACT FOR: CONTRACT DATE: PROJECT NOS: / /	Distribution to: OWNER: ☐ ARCHITECT: ☐ CONTRACTOR: ☐ FIELD: ☐ OTHER: ☐
FROM CONTRACTOR:		VIA ARCHITECT:	(Owner's Representative) Envirotech Environmental Consulting, Inc. 17605 Nassau Commons Blvd, Unit D, Lewes, Delaware 19958		

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM..... $0.00
2. NET CHANGE BY CHANGE ORDERS..... $0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2) $0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)..... $0.00
5. RETAINAGE:
   a. 0 % of Completed Work
      (Column D + E on G703: $0.00)= $0.00
   b. 0 % of Stored Material
      (Column F on G703: $0.00)= $0.00

Total Retainage (Lines 5a + 5b or Total in Column I of G703)..... $0.00

6. TOTAL EARNED LESS RETAINAGE..... $0.00
   (Line 4 Less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT..... $0.00
   (Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE..... $0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE
   (Line 3 less Line 6) $0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: Date:

State of:
County of:
Subscribed and sworn to before me this day of
Notary Public:
My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED..... $0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

"NOT FOR BIDDING"

DRAFT

AIA® Document G703™ – 1992

Continuation Sheet

AIA Document, G702™–1992, Application and Certification for Payment, or G736™–2009, Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:	001
APPLICATION DATE:	
PERIOD TO:	
ARCHITECT'S PROJECT NO:	

"NOT FOR BIDDING"

A	B	C	D	E	F	G		H	I
			WORK COMPLETED						
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
	GRAND TOTAL	$0.00	$0.00	$0.00	$0.00	$0.00	0.00%	$0.00	$0.00

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AIA® Document G706™ - 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)*
2018 Asbestos Abatement at North Laurel Elementary School - Main Corridor Classrooms and Hallway

ARCHITECT'S PROJECT NUMBER:
EECI-09218

CONTRACT FOR: Asbestos Abatement
CONTRACT DATED:

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
SURETY: ☐
OTHER: ☐

TO OWNER: *(Name and address)*
Laurel School District,
1160 S. Central Avenue
Laurel, Delaware 19956

STATE OF: Delaware
COUNTY OF: Sussex

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encnmbered.

EXCEPTIONS:
None.

"NOT FOR BIDDING"

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☐ Yes ☒ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment snppliers, to the extent required by the Owner, accompanied by a list thereof.

3. Contractor's Affidavit of Release of Liens (AIA Docnment G706A).

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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AIA® Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*
2018 Asbestos Abatement at North Laurel Elementary School - Main Corridor Classrooms and Hallway

ARCHITECT'S PROJECT NUMBER:
EECI - 092618

CONTRACT FOR: Asbestos Abatement

CONTRACT DATED:

TO OWNER: *(Name and address)*
Laurel School District
1160 S. Central Avenue, Laurel, Delaware 19956

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
SURETY: ☐
OTHER: ☐

STATE OF: Delaware
COUNTY OF: Sussex

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:
None.

"NOT FOR BIDDING"

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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User Notes:

(3B9ADA2A)

PART II

GENERAL SPECIFICATIONS

"NOT FOR BIDDING"

AIA® Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
North Laurel Elementary School, 600 Wilson Street, Laurel, Delaware 19956
Asbestos Abatement at Main Corridor Classrooms and Hallway

THE OWNER:
(Name, legal status and address)
Laurel School District
1160 South Central Avenue, Laurel, Delaware 19956

THE ARCHITECT:
(Name, legal status and address)
Envirotech Environmental Consulting, Inc. (Owner's Representative)
17605 Nassau Commons Boulevard, Unit D, Lewes, Delaware 19958

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

"NOT FOR BIDDING"

TABLE OF ARTICLES

1 GENERAL PROVISIONS

2 OWNER

3 CONTRACTOR

4 ARCHITECT

5 SUBCONTRACTORS

6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

7 CHANGES IN THE WORK

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9 PAYMENTS AND COMPLETION

10 PROTECTION OF PERSONS AND PROPERTY

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire aud integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor aud the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

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The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

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§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the

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portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

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§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amonnts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

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§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or reqnests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

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§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

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§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

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§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall

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continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

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§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required

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submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

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§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop

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Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public anthorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

"NOT FOR BIDDING"

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a

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party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compeusation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practiciug architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owuer shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will uot be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

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§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed.

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However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

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§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcoutractor" does not include a separate contractor or subcontractors of a separate contractor.

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§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

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By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additioual cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner uutil subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

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§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

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§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may, by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

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§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mntually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Docnments or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

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§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- **.1** Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- **.2** Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- **.3** Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- **.4** Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- **.5** Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

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§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

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§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

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§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and snpported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon

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compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided iu Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and helief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluatiou of the Work for conformance with the Contract Documents upou Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procednres, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examinations to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

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§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if iu the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the

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Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

"NOT FOR BIDDING"

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle auy person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

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§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or ntilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is snbstantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required nnder Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial ocenpancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

"NOT FOR BIDDING"

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract

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Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

NOT FOR BIDDING"

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in

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whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide snfficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS
§ 10.3.1 The Contractor is responsible for compliance with any requirements inclnded in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

"NOT FOR BIDDING"

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

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§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

"NOT FOR BIDDING"

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional

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insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE
The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE
§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

"NOT FOR BIDDING"

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE
The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE
The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

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§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

"NOT FOR BIDDING"

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

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§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

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§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be

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sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

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§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

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§ 13.5.3 If such procedures for testing, inspection or approval nnder Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections condncted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

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§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

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§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereou owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

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§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

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§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

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§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

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§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a reqnest for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

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§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitnte consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

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North Laurel Elementary School, 600 Wilson Street, Laurel, Delaware 19956
Asbestos Abatement at Main Corridor Classrooms and Hallway

...

Laurel School District
1160 South Central Avenue, Laurel, Delaware 19956

...

Envirotech Environmental Consulting, Inc. (Owner's Representative)
17605 Nassau Commons Boulevard, Unit D, Lewes, Delaware 19958

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_____

(Signed)

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(Title)

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(Dated)

"NOT FOR BIDDING"

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SUPPLEMENTARY GENERAL CONDITIONS A201-2007

The following supplements modify the "General Conditions of the Contract for Construction," AIA Document A201-2007. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

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ARTICLE 1: GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

Delete the last sentence in its entirety and replace with the following:

"The Contract Documents also include Advertisement for Bid, Instructions to Bidder, sample forms, the Bid Form, the Contractor's completed Bid and the Award Letter."

Add the following Paragraph:

1.1.1.1 In the event of conflict or discrepancies among the Contract Documents, the Documents prepared by the State of Delaware, Division of Facilities Management shall take precedence over all other documents.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following Paragraphs:

1.2.4 In the case of an inconsistency between the Drawings and the Specifications, or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Architect's interpretation.

1.2.5 The word "PROVIDE" as used in the Contract Documents shall mean "FURNISH AND INSTALL" and shall include, without limitation, all labor, materials, equipment, transportation, services and other items required to complete the Work.

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1.2.6 The word "PRODUCT" as used in the Contract Documents means all materials, systems and equipment.

1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

Delete Paragraph 1.5.1 in its entirety and replace with the following:

"All pre-design studies, drawings, specifications and other documents, including those in electronic form, prepared by the Architect under this Agreement are, and shall remain, the property of the Owner whether the Project for which they are made is executed or not. Such documents may be used by the Owner to construct one or more like Projects without the approval of, or additional compensation to, the Architect. The Contractor, Subcontractors, Sub-subcontractors and Material or Equipment Suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or Material and Equipment Supplier on other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and Architect's consultants.

The Architect shall not be liable for injury or damage resulting from the re-use of drawings and specifications if the Architect is not involved in the re-use Project. Prior to re-use of construction documents for a Project in which the Architect is not also involved, the Owner will remove from such documents all identification of the original Architect, including name, address and professional seal or stamp."

Delete Paragraph 1.5.2 in its entirety.

ARTICLE 2: OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

To Subparagraph 2.2.3 – Add the following sentence:

"The Contractor, at their expense shall bear the costs to accurately identify the location of all underground utilities in the area of their excavation and shall bear all cost for any repairs required, out of failure to accurately identify said utilities."

Delete Subparagraph 2.2.5 in its entirety and substitute the following:

2.2.5 The Contractor shall be furnished free of charge up to five (5) sets of the Drawings and Project Manuals. Additional sets will be furnished at the cost of reproduction, postage and handling.

ARTICLE 3: CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Amend Paragraph 3.2.2 to state that any errors, inconsistencies or omissions discovered shall be reported to the Architect and Owner immediately.

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Delete the third sentence in Paragraph 3.2.3.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

Add the following Paragraphs:

3.3.2.1 The Contractor shall immediately remove from the Work, whenever requested to do so by the Owner, any person who is considered by the Owner or Architect to be incompetent or disposed to be so disorderly, or who for any reason is not satisfactory to the Owner, and that person shall not again be employed on the Work without the consent of the Owner or the Architect.

3.3.4 The Contractor must provide suitable storage facilities at the Site for the proper protection and safe storage of their materials. Consult the Owner and the Architect before storing any materials.

3.3.5 When any room is used as a shop, storeroom, office, etc., by the Contractor or Subcontractor(s) during the construction of the Work, the Contractor making use of these areas will be held responsible for any repairs, patching or cleaning arising from such use.

3.4 LABOR AND MATERIALS

Add the Following Paragraphs:

3.4.4 Before starting the Work, each Contractor shall carefully examine all preparatory Work that has been executed to receive their Work. Check carefully, by whatever means are required, to insure that its Work and adjacent, related Work, will finish to proper contours, planes and levels. Promptly notify the General Contractor/Construction Manager of any defects or imperfections in preparatory Work which will in any way affect satisfactory completion of its Work. Absence of such notification will be construed as an acceptance of preparatory Work and later claims of defects will not be recognized.

3.4.5 Under no circumstances shall the Contractor's Work proceed prior to preparatory Work proceed prior to preparatory Work having been completely cured, dried and/or otherwise made satisfactory to receive this Work. Responsibility for timely installation of all materials rests solely with the Contractor responsible for that Work, who shall maintain coordination at all times.

3.5 WARRANTY

Add the following Paragraphs:

3.5.1 The Contractor will guarantee all materials and workmanship against original defects, except injury from proper and usual wear when used for the purpose intended, for two years after Acceptance by the Owner, and will maintain all items in perfect condition during the period of guarantee.

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3.5.2 Defects appearing during the period of guarantee will be made good by the Contractor at his expense upon demand of the Owner, it being required that all work will be in perfect condition when the period of guarantee will have elapsed.

3.5.3 In addition to the General Guarantee there are other guarantees required for certain items for different periods of time than the two years as above, and are particularly so stated in that part of the specifications referring to same. The said guarantees will commence at the same time as the General Guarantee.

3.5.4 If the Contractor fails to remedy any failure, defect or damage within a reasonable time after receipt of notice, the Owner will have the right to replace, repair, or otherwise remedy the failure, defect or damage at the Contractor's expense.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following Paragraphs:

3.11.1 During the course of the Work, the Contractor shall maintain a record set of drawings on which the Contractor shall mark the actual physical location of all piping, valves, equipment, conduit, outlets, access panels, controls, actuators, including all appurtenances that will be concealed once construction is complete, etc., including all invert elevations.

3.11.2 At the completion of the project, the Contractor shall obtain a set of reproducible drawings from the Architect, and neatly transfer all information outlined in 3.11.1 to provide a complete record of the as-built conditions.

3.11.3 The Contractor shall provide two (2) prints of the as-built conditions, along with the reproducible drawings themselves, to the Owner and one (1) set to the Architect. In addition, attach one complete set to each of the Operating and Maintenance Instructions/Manuals.

3.17 In the second sentence of the paragraph, insert "indemnify" between "shall" and "hold".

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.2 ADMINISTRATION OF THE CONTRACT

Delete the first sentence of Paragraph 4.2.7 and replace with the following:

The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples for the purpose of checking for conformance with the Contract Documents.

Delete the second sentence of Paragraph 4.2.7 and replace with the following:

The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work in the activities of the Owner, Contractor or separate Contractors, while allowing sufficient time in the Owner's professional judgment to permit adequate review.

Add the following Paragraph:

4.2.10.1 There will be no full-time project representative provided by the Owner or Architect on this project.

Add to Paragraph 4.2.13 "and in compliance with all local requirements." to the end of the sentence.

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ARTICLE 5: SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

Delete Paragraph 5.2.3 in its entirety and replace with the following:

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection, subject to the statutory requirements of 29 Delaware Code § 6962(d)(10)b.3 and 4.

ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

Delete Paragraph 6.1.4 in its entirety.

6.2 MUTUAL RESPONSIBILITY

6.2.3 In the second sentence, strike the word "shall" and insert the word "may".

ARTICLE 7: CHANGES IN THE WORK

(SEE ARTICLE 7: CHANGES IN WORK IN THE GENERAL REQUIREMENTS)

ARTICLE 8: TIME

8.2 PROGRESS AND COMPLETION

Add the following Paragraphs:

8.2.1.1 Refer to Specification Section SUMMARY OF WORK for Contract time requirements.

8.2.4 If the Work falls behind the Progress Schedule as submitted by the Contractor, the Contractor shall employ additional labor and/or equipment necessary to bring the Work into compliance with the Progress Schedule at no additional cost to the Owner.

8.3 DELAYS AND EXTENSION OF TIME

8.3.1 Strike "arbitration" and insert "remedies at law or in equity".

Add the following Paragraph:

8.3.2.1 The Contractor shall update the status of the suspension, delay, or interruption of the Work with each Application for Payment. (The Contractor shall report the termination of such cause immediately upon the termination thereof.) Failure to comply with this procedure shall constitute a waiver for any claim for adjustment of time or price based upon said cause.

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Delete Paragraph 8.3.3 in its entirety and replace with the following:

8.3.3 Except in the case of a suspension of the Work directed by the Owner, an extension of time under the provisions of Paragraph 8.3.1 shall be the Contractor's sole remedy in the progress of the Work and there shall be no payment or compensation to the Contractor for any expense or damage resulting from the delay.

Add the following Paragraph:

8.3.4 By permitting the Contractor to work after the expired time for completion of the project, the Owner does not waive their rights under the Contract.

ARTICLE 9: PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Add the following Paragraphs:

9.2.1 The Schedule of Values shall be submitted using AIA Document G702, Continuation Sheet to G703.

9.2.2 The Schedule of Values is to include a line item for Project Closeout Document Submittal. The value of this item is to be no less than 1% of the initial contract amount.

9.3 APPLICATIONS FOR PAYMENT

Add the following Paragraph:

9.3.1.3 Application for Payment shall be submitted on AIA Document G702 "Application and Certificate for Payment", supported by AIA Document G703 "Continuation Sheet". Said Applications shall be fully executed and notarized.

Add the following Paragraphs:

9.3.4 Until Closeout Documents have been received and outstanding items completed the Owner will pay 95% (ninety-five percent) of the amount due the Contractor on account of progress payments.

9.3.5 The Contractor shall provide a current and updated Progress Schedule to the Architect with each Application for Payment. Failure to provide Schedule will be just cause for rejection of Application for Payment.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

Add the following to 9.5.1:

.8 failure to provide a current Progress Schedule;
.9 a lien or attachment is filed;
.10 failure to comply with mandatory requirements for maintaining Record Documents.

9.6 PROGRESS PAYMENTS

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Delete Paragraph 9.6.1 in its entirety and replace with the following:

9.6.1 After the Architect has approved and issued a Certificate for Payment, payment shall be made by the Owner within 30 days after Owner's receipt of the Certificate for Payment.

9.7 FAILURE OF PAYMENT

In first sentence, strike "seven" and insert "thirty (30)". Also strike "binding dispute resolution" and insert "remedies at law or in equity".

9.8 SUBSTANTIAL COMPLETION

To Subparagraph 9.8.3 - Add the following sentence:

"If the Architect is required to make more than 2 inspections of the same portion of work, the Contractor shall be responsible for all costs associated with subsequent inspections including but not limited to any Architect's fees."

9.8.5 In the second sentence, strike "shall" and insert "may".

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

Add the following Paragraphs:

10.1.1.1.1 Each Contractor shall develop a safety program in accordance with the Occupational Safety and Health Act of 1970. A copy of said plan shall be furnished to the Owner and Architect prior to the commencement of that Contractor's Work.

10.1.2 Each Contractor shall appoint a Safety Representative. Safety Representatives shall be someone who is on site on a full time basis. If deemed necessary by the Owner or Architect, Contractor Safety meetings will be scheduled. The attendance of all Safety Representatives will be required. Minutes will be recorded of said meetings by the Contractor and will be distributed to all parties as well as posted in all job offices/trailers etc.

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following Paragraph:

10.2.4.1 As required in the Hazardous Chemical Act of June 1984, all vendors supplying any material that may be defined as hazardous must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a caution warning on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in foreseeable emergency situations. Material Safety Data Sheets shall be provided directly to the Owner, along with the shipping slips that include those products.

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10.3 HAZARDOUS MATERIALS

Delete Paragraph 10.3.3 in its entirety.

Delete Paragraph 10.3.6 in its entirety.

ARTICLE 11: INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.4 Strike "the Owner" immediately following "(1)" and strike "and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations."

11.2 OWNER'S LIABILITY INSURANCE

Delete Paragraph 11.2 in its entirety.

11.3 PROPERTY INSURANCE

Delete Paragraph 11.3 in its entirety and replace with the following:

11.3 The State will not provide Builder's All Risk Insurance for the Project. The Contractor and all Subcontractors shall provide property coverage for their tools and equipment, as necessary. Any mandatory deductible required by the Contractor's Insurance shall be the responsibility of the Contractor.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 Add the following sentence: "The bonds will conform to those forms approved by the Office of Management and Budget."

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2.2 AFTER SUBSTANTIAL COMPLETION

Add the following Paragraph:

12.2.2.1.1 At any time during the progress of the Work, or in any case where the nature of the defects will be such that it is not expedient to have corrected, the Owner, at its option, will have the right to deduct such sum, or sums, of money from the amount of the Contract as it considers justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

12.2.2.1 Strike "one" and insert "two".

12.2.2.2 Strike "one" and insert "two".

12.2.2.3 Strike "one" and insert "two".

12.2.5 In second sentence, strike "one" and insert "two".

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

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Strike "except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4."

13.6 INTEREST

Strike "the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located." Insert "30 days of presentment of the authorized Certificate of Payment at the annual rate of 12% or 1% per month.

13.7 TIME LIMITS ON CLAIMS

Strike the last sentence.

Add the following Paragraph:

13.8 CONFLICTS WITH FEDERAL STATUTES OR REGULATIONS

13.8.1 If any provision, specifications or requirement of the Contract Documents conflict or is inconsistent with any statute, law or regulation of the government of the United State of America, the Contractor shall notify the Architect and Owner immediately upon discovery.

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

Delete Paragraph 14.4.3 in its entirety and replace with the following:

14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and cost incurred by reason of such termination along with reasonable overhead.

ARTICLE 15: CLAIMS AND DISPUTES

15.1.2 Throughout the Paragraph strike "21" and insert "45".

15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

Delete Paragraph 15.1.6 in its entirety.

15.2 INITIAL DECISION

Delete Paragraph 15.2.5 in its entirety and replace with the following:

15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be subject to mediation and other remedies at law or in equity.

Delete Paragraph 15.2.6 and its subparagraphs in their entirety.

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15.3 MEDIATION

15.3.1 Strike "binding dispute resolution" and insert "any or all remedies at law or in equity".

15.3.2 In the first sentence, delete "administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedure in effect on the date of the Agreement," Strike "binding dispute resolution" and insert "remedies at law and in equity".

15.4 ARBITRATION

Delete Paragraph 15.4 and its sub-sections in its entirety.

END OF SUPPLEMENTARY GENERAL CONDITIONS

GENERAL REQUIREMENTS

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ARTICLE 1: GENERAL

1.1 CONTRACT DOCUMENTS

1.1.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to an extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.1.2 Work including material purchases shall not begin until the Contractor is in receipt of a bonafide State of Delaware Purchase Order. Any work performed or material purchases prior to the issuance of the Purchase Order is done at the Contractor's own risk and cost.

1.2 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

1.2.1 For Public Works Projects financed in whole or in part by state appropriation the Contractor agrees that during the performance of this contract:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, sexual orientation, gender identity or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, sex, color, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

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2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, sex, color, sexual orientation, gender identity or national origin."

ARTICLE 2: OWNER

(NO ADDITIONAL GENERAL REQUIREMENTS – SEE SUPPLEMENTARY GENERAL CONDITIONS)

ARTICLE 3: CONTRACTOR

3.1 Schedule of Values: The successful Bidder shall within twenty (20) days after receiving notice to proceed with the work, furnish to the Owner a complete schedule of values on the various items comprising the work.

3.2 Subcontracts: Upon approval of Subcontractors, the Contractor shall award their Subcontracts as soon as possible after the signing of their own contract and see that all material, their own and those of their Subcontractors, are promptly ordered so that the work will not be delayed by failure of materials to arrive on time.

3.3 Before commencing any work or construction, the General Contractor is to consult with the Owner as to matters in connection with access to the site and the allocation of Ground Areas for the various features of hauling, storage, etc.

3.4 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions.

3.5 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

3.6 The Contractor warrants to the Owner that materials and equipment furnished will be new and of good quality, unless otherwise permitted, and that the work will be free from defects and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved, may be considered defective. If required by the Owner, the Contractor shall furnish evidence as to the kind and quality of materials and equipment provided.

3.7 Unless otherwise provided, the Contractor shall pay all sales, consumer, use and other similar taxes, and shall secure and pay for required permits, fees, licenses, and inspections necessary for proper execution of the Work.

3.8 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work. The Contractor shall promptly notify the Owner if the Drawings and Specifications are observed to be at variance therewith.

3.9 The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under contract with the Contractor.

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3.10 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project all waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. The Contractor shall be responsible for returning all damaged areas to their original conditions.

3.11 STATE LICENSE AND TAX REQUIREMENTS

3.11.1 Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the Delaware Department of Finance within ten (10) days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of total value of such contract or contracts together with the names and addresses of the contracting parties."

3.12 The Contractor shall comply with all requirements set forth in Section 6962, Chapter 69, Title 29 of the Delaware Code.

3.13 During the contract Work, the Contractor and each listed Subcontractor, shall implement an Employee Drug Testing Program in accordance with OMB Regulation 4104- "Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on "Large Public Works Projects". "Large Public Works" is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.1 CONTRACT SURETY

4.1.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

4.1.2 All bonds will be required as follows unless specifically waived elsewhere in the Bidding Documents.

4.1.3 Contents of Performance Bonds – The bond shall be in the form approved by the Office of Management and Budget. The bond shall be conditioned upon the faithful compliance and performance by the successful bidder of each and every term and condition of the contract and the proposal, plans, specifications, and bid documents thereof. Each term and condition shall be met at the time and in the manner prescribed by the Contract, Bid documents and the specifications, including the payment in full to every person furnishing materiel or performing labor in the performance of the Contract, of all sums of money due the person for such labor and materiel. (The bond shall also contain the successful bidder's guarantee to indemnify and save harmless the State and the agency from all costs, damages and expenses growing out of or by reason of the Contract in accordance with the Contract.)

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4.1.4 Invoking a Performance Bond – The agency may, when it considers that the interest of the State so require, cause judgement to be confessed upon the bond.

4.1.5 Within twenty (20) days after the date of notice of award of contract, the Bidder to whom the award is made shall furnish a Performance Bond and Labor and Material Payment Bond, each equal to the full amount of the Contract price to guarantee the faithful performance of all terms, covenants and conditions of the same. The bonds are to be issued by an acceptable Bonding Company licensed to do business in the State of Delaware and shall be issued in duplicate.

4.1.6 Performance and Payment Bonds shall be maintained in full force (warranty bond) for a period of two (2) years after the date of the Certificate for Final Payment. The Performance Bond shall guarantee the satisfactory completion of the Project and that the Contractor will make good any faults or defects in his work which may develop during the period of said guarantees as a result of improper or defective workmanship, material or apparatus, whether furnished by themselves or their Sub-Contractors. The Payment Bond shall guarantee that the Contractor shall pay in full all persons, firms or corporations who furnish labor or material or both labor and material for, or on account of, the work included herein. The bonds shall be paid for by this Contractor. The Owner shall have the right to demand that the proof parties signing the bonds are duly authorized to do so.

4.2 FAILURE TO COMPLY WITH CONTRACT

4.2.1 If any firm entering into a contract with the State, or Agency that neglects or refuses to perform or fails to comply with the terms thereof, the Agency which signed the Contract may terminate the Contract and proceed to award a new contract in accordance with this Chapter 69, Title 29 of the Delaware Code or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond. Nothing herein shall preclude the Agency from pursing additional remedies as otherwise provided by law.

4.3 CONTRACT INSURANCE AND CONTRACT LIABILITY

4.3.1 In addition to the bond requirements stated in the Bid Documents, each successful Bidder shall purchase adequate insurance for the performance of the Contract and, by submission of a Bid, agrees to indemnify and save harmless and to defend all legal or equitable actions brought against the State, any Agency, officer and/or employee of the State, for and from all claims of liability which is or may be the result of the successful Bidder's actions during the performance of the Contract.

4.3.2 The purchase or nonpurchase of such insurance or the involvement of the successful Bidder in any legal or equitable defense of any action brought against the successful Bidder based upon work performed pursuant to the Contract will not waive any defense which the State, its agencies and their respective officers, employees and agents might otherwise have against such claims, specifically including the defense of sovereign immunity, where applicable, and by the terms of this section, the State and all agencies, officers and employees thereof shall not be financially responsible for the consequences of work performed, pursuant to said contract.

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4.4 RIGHT TO AUDIT RECORDS

4.4.1 The Owner shall have the right to audit the books and records of a Contractor or any Subcontractor under any Contract or Subcontract to the extent that the books and records relate to the performance of the Contract or Subcontract.

4.4.2 Said books and records shall be maintained by the Contractor for a period of seven (7) years from the date of final payment under the Prime Contract and by the Subcontractor for a period of seven (7) years from the date of final payment under the Subcontract.

ARTICLE 5: SUBCONTRACTORS

5.1 SUBCONTRACTING REQUIREMENTS

5.1.1 All contracts for the construction, reconstruction, alteration or repair of any public building (not a road, street or highway) shall be subject to the following provisions:

1. A contract shall be awarded only to a Bidder whose Bid is accompanied by a statement containing, for each Subcontractor category, the name and address (city or town and State only – street number and P.O. Box addresses not required) of the subcontractor whose services the Bidder intends to use in performing the Work and providing the material for such Subcontractor category.

2. A Bid will not be accepted nor will an award of any Contract be made to any Bidder which, as the Prime Contractor, has listed itself as the Subcontractor for any Subcontractor unless:

   A. It has been established to the satisfaction of the awarding Agency that the Bidder has customarily performed the specialty work of such Subcontractor category by artisans regularly employed by the Bidder's firm;

   B. That the Bidder is duly licensed by the State to engage in such specialty work, if the State requires licenses; and

   C. That the Bidder is recognized in the industry as a bona fide Subcontractor or Contractor in such specialty work and Subcontractor category.

5.1.2 The decision of the awarding Agency as to whether a Bidder who list itself as the Subcontractor for a Subcontractor category shall be final and binding upon all Bidders, and no action of any nature shall lie against any awarding agency or its employees or officers because of its decision in this regard.

5.1.3 After such a Contract has been awarded, the successful Bidder shall not substitute another Subcontractor for any Subcontractor whose name was set forth in the statement which accompanied the Bid without the written consent of the awarding Agency.

5.1.4 No Agency shall consent to any substitution of Subcontractors unless the Agency is satisfied that the Subcontractor whose name is on the Bidders accompanying statement:

"NOT FOR BIDDING"

   A. Is unqualified to perform the work required;

   B. Has failed to execute a timely reasonable Subcontract;

   C. Has defaulted in the performance on the portion of the work covered by the Subcontract; or

   D. Is no longer engaged in such business.

5.1.5 Should a Bidder be awarded a contract, such successful Bidder shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

5.2 PENALTY FOR SUBSTITUTION OF SUBCONTRACTORS

5.2.1 Should the Contractor fail to utilize any or all of the Subcontractors in the Contractor's Bid statement in the performance of the Work on the public bidding, the Contractor shall be penalized in the amount of (project specific amount*). The Agency may determine to deduct payments of the penalty from the Contractor or have the amount paid directly to the Agency. Any penalty amount assessed against the Contractor may be remitted or refunded, in whole or in part, by the Agency awarding the Contract, only if it is established to the satisfaction of the Agency that the Subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty shall be granted unless an application is filed within one year after the liability of the successful Bidder accrues. All penalty amounts assessed and not refunded or remitted to the contractor shall be reverted to the State.

*one (1) percent of contract amount not to exceed $10,000

5.3 ASBESTOS ABATEMENT

5.3.1 The selection of any Contractor to perform asbestos abatement for State-funded projects shall be approved by the Office of Management and Budget, Division of Facilities Management pursuant to Chapter 78 of Title 16.

5.4 STANDARDS OF CONSTRUCTION FOR THE PROTECTION OF THE PHYSICALLY HANDICAPPED

5.4.1 All Contracts shall conform with the standard established by the Delaware Architectural Accessibility Board unless otherwise exempted by the Board.

"NOT FOR BIDDING"

5.5 CONTRACT PERFORMANCE

5.5.1 Any firm entering into a Public Works Contract that neglects or refuses to perform or fails to comply with its terms, the Agency may terminate the Contract and proceed to award a new Contract or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond.

ARTICLE 6: CONSTRUCTION BY OWNER OR SEPARATE CONTRACTORS

6.1 The Owner reserves the right to simultaneously perform other construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other Projects at the same site.

6.2 The Contractor shall afford the Owner and other Contractors reasonable opportunity for access and storage of materials and equipment, and for the performance of their activities, and shall connect and coordinate their activities with other forces as required by the Contract Documents.

ARTICLE 7: CHANGES IN THE WORK

7.1 The Owner, without invalidating the Contract, may order changes in the Work consisting of Additions, Deletions, Modifications or Substitutions, with the Contract Sum and Contract completion date being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Professional, as the duly authorized agent, the Contractor and the Owner.

7.2 The Contract Sum and Contract Completion Date shall be adjusted only by a fully executed Change Order.

7.3 The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor and the Architect. In all cases, this cost or credit shall be based on the 'DPE' wages required and the "invoice price" of the materials/equipment needed.

7.3.1 "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman's compensation insurance, Social Security/Medicare, and unemployment insurance (a maximum multiplier of 1.35 times DPE).

7.3.2 "Invoice price" of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor, (or subcontractor), to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity. Rates for equipment that is leased and/or owned by the Contractor or subcontractor(s) shall not exceed those listed in the latest version of the "Means Building Construction Cost Data" publication.

7.3.3 In addition to the above, the General Contractor is allowed a fifteen percent (15%) markup for overhead and profit for additional work performed by the General Contractor's own forces. For additional subcontractor work, the Subcontractor is allowed a fifteen (15) percent overhead and profit on change order work above and beyond the direct costs stated previously. To this amount, the General Contractor will be allowed a mark-up not exceeding seven and one half percent (7.5%) on the subcontractors work. These mark-ups shall include all costs including, but not limited to, overhead, profit, bonds, insurance, supervision, etc. No markup is permitted on the work of the subcontractors subcontractor. No additional costs shall be allowed for changes related to the Contractor's onsite superintendent/staff, or project manager, unless a change in the work changes the project duration and is identified by the CPM schedule. There will be no other costs associated with the change order.

"NOT FOR BIDDING"

ARTICLE 8: TIME

8.1 Time limits, if any, are as stated in the Project Manual. By executing the Agreement, the Contractor confirms that the stipulated limits are reasonable, and that the Work will be completed within the anticipated time frame.

8.2 If progress of the Work is delayed at any time by changes ordered by the Owner, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be extended for such reasonable time as the Owner may determine.

8.3 Any extension of time beyond the date fixed for completion of the construction and acceptance of any part of the Work called for by the Contract, or the occupancy of the building by the Owner, in whole or in part, previous to the completion shall not be deemed a waiver by the Owner of his right to annul or terminate the Contract for abandonment or delay in the matter provided for, nor relieve the Contractor of full responsibility.

8.4 SUSPENSION AND DEBARMENT

8.4.1 Per Section 6962(d)(14), Title 29, Delaware Code, "Any Contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the Agency in the Invitation To Bid, may be subject to Suspension or Debarment for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the Project."

8.4.2 "Upon such failure for any of the above stated reasons, the Agency that contracted for the public works project may petition the Director of the Office of Management and Budget for Suspension or Debarment of the Contractor. The Agency shall send a copy of the petition to the Contractor within three (3) working days of filing with the Director. If the Director concludes that the petition has merit, the Director shall schedule and hold a hearing to determine whether to suspend the Contractor, debar the Contractor or deny the petition. The Agency shall have the burden of proving, by a preponderance of the evidence, that the Contractor failed to perform or complete the public works project within the time schedule established by the Agency and failed to do so for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the project. Upon a finding in favor of the Agency, the Director may suspend a Contractor from Bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3 years for a second offense and permanently debar the Contractor for a third offense. The Director shall issue a written decision and shall send a copy to the Contractor and the Agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record."

8.5 RETAINAGE

"NOT FOR BIDDING"

8.5.1 Per Section 6962(d)(5) a.3, Title 29, Delaware Code: The Agency may at the beginning of each public works project establish a time schedule for the completion of the project. If the project is delayed beyond the completion date due to the Contractor's failure to meet their responsibilities, the Agency may forfeit, at its discretion, all or part of the Contractor's retainage.

8.5.2 This forfeiture of retainage also applies to the timely completion of the punchlist. A punchlist will only be prepared upon the mutual agreement of the Owner, Architect and Contractor. Once the punchlist is prepared, all three parties will by mutual agreement, establish a schedule for its completion. Should completion of the punchlist be delayed beyond the established date due to the Contractor's failure to meet their responsibilities, the Agency may hold permanently, at its discretion, all or part of the Contractor's retainage.

ARTICLE 9: PAYMENTS AND COMPLETION

9.1 APPLICATION FOR PAYMENT

9.1.1 Applications for payment shall be made upon AIA Document G702. There will be a five percent (5%) retainage on all Contractor's monthly invoices until completion of the project. This retainage may become payable upon receipt of all required closeout documentation, provided all other requirements of the Contract Documents have been met.

9.1.2 A date will be fixed for the taking of the monthly account of work done. Upon receipt of Contractor's itemized application for payment, such application will be audited, modified, if found necessary, and approved for the amount. Statement shall be submitted to the Owner.

9.1.3 Section 6516, Title 29 of the Delaware Code annualized interest is not to exceed 12% per annum beginning thirty (30) days after the "presentment" (as opposed to the date) of the invoice.

9.2 PARTIAL PAYMENTS

9.2.1 Any public works Contract executed by any Agency may provide for partial payments at the option of the Owner with respect to materials placed along or upon the sites or stored at secured locations, which are suitable for use in the performance of the contract.

9.2.2 When approved by the agency, partial payment may include the values of tested and acceptable materials of a nonperishable or noncontaminative nature which have been produced or furnished for incorporation as a permanent part of the work yet to be completed, provided acceptable provisions have been made for storage.

9.2.2.1 Any allowance made for materials on hand will not exceed the delivered cost of the materials as verified by invoices furnished by the Contractor, nor will it exceed the contract bid price for the material complete in place.

9.2.3 If requested by the Agency, receipted bills from all Contractors, Subcontractors, and material, men, etc., for the previous payment must accompany each application for payment. Following such a request, no payment will be made until these receipted bills have been received by the Owner.

9.3 SUBSTANTIAL COMPLETION

9.3.1 When the building has been made suitable for occupancy, but still requires small items of miscellaneous work, the Owner will determine the date when the project has been substantially completed.

"NOT FOR BIDDING"

9.3.2 If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and without terminating the Contract, the Owner may make payment of the balance due for the portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment that it shall not constitute a waiver of claims.

9.3.3 On projects where commissioning is included, the commissioning work as defined in the specifications must be complete prior to the issuance of substantial completion.

9.4 FINAL PAYMENT

9.4.1 Final payment, including the five percent (5%) retainage if determined appropriate, shall be made within thirty (30) days after the Work is fully completed and the Contract fully performed and provided that the Contractor has submitted the following closeout documentation (in addition to any other documentation required elsewhere in the Contract Documents):

9.4.1.1 Evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid,

9.4.1.2 An acceptable RELEASE OF LIENS,

9.4.1.3 Copies of all applicable warranties,

9.4.1.4 As-built drawings,

9.4.1.5 Operations and Maintenance Manuals,

9.4.1.6 Instruction Manuals,

9.4.1.7 Consent of Surety to final payment.

9.4.1.8 The Owner reserves the right to retain payments, or parts thereof, for its protection until the foregoing conditions have been complied with, defective work corrected and all unsatisfactory conditions remedied.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take all reasonable precautions to prevent damage, injury or loss to: workers, persons nearby who may be affected, the Work, materials and equipment to be incorporated, and existing property at the site or adjacent thereto. The Contractor shall give notices and comply with applicable laws ordinances, rules regulations, and lawful orders of public authorities bearing on the safety of persons and property and their protection from injury, damage, or loss. The Contractor shall promptly remedy damage and loss to property at the site caused in whole or in part by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

10.2 The Contractor shall notify the Owner in the event any existing hazardous material such as lead, PCBs, asbestos, etc. is encountered on the project. The Owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulation laws and ordinances. The Contractor and Architect will not be required to participate in or to perform this operation. Upon completion of this work, the Owner will notify the Contractor and Architect in writing the area has been cleared and approved by the authorities in order for the work to proceed. The Contractor shall attach documentation from the authorities of said approval.

NOT FOR BIDDING

10.3 As required in the Hazardous Chemical Information Act of June 1984, all vendors supplying any materials that may be defined as hazardous, must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a warning caution on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in any foreseeable emergency situation. Material Safety Data Sheets must be provided directly to the Owner along with the shipping slips that include those products.

10.4 The Contractor shall certify to the Owner that materials incorporated into the Work are free of all asbestos. This certification may be in the form of Material Safety Data Sheet (MSDS) provided by the product manufacturer for the materials used in construction, as specified or as provided by the Contractor.

ARTICLE 11: INSURANCE AND BONDS

11.1 The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.

11.2 Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.

11.3 Bodily Injury Liability and Property Damage Liability Insurance shall, in addition to the coverage included herein, include coverage for injury to or destruction of any property arising out of the collapse of or structural injury to any building or structure due to demolition work and evidence of these coverages shall be filed with and approved by the Owner.

11.4 The Contractor's Property Damage Liability Insurance shall, in addition to the coverage noted herein, include coverage on all real and personal property in their care, custody and control damaged in any way by the Contractor or their Subcontractors during the entire construction period on this project.

11.5 Builders Risk (including Standard Extended Coverage Insurance) on the existing building during the entire construction period, shall not be provided by the Contractor under this contract. The Owner shall insure the existing building and all of its contents and all this new alteration work under this contract during entire construction period for the full insurable value of the entire work at the site. Note, however, that the Contractor and their Subcontractors shall be responsible for insuring building materials (installed and stored) and their tools and equipment whenever in use on the project, against fire damage, theft, vandalism, etc.

11.6 Certificates of the insurance company or companies stating the amount and type of coverage, terms of policies, etc., shall be furnished to the Owner, within 20 days of contract award.

"NOT FOR BIDDING"

11.7 The Contractor shall, at their own expense, in addition to the above, carry the following forms of insurance:

11.7.1 Contractor's Contractual Liability Insurance

Minimum coverage to be:

Bodily Injury	$500,000	for each person
	$1,000,000	for each occurrence
	$1,000,000	aggregate
Property Damage	$500,000	for each occurrence
	$1,000,000	aggregate

11.7.2 Contractor's Protective Liability Insurance

Minimum coverage to be:

Bodily Injury	$500,000	for each person
	$1,000,000	for each occurrence
	$1,000,000	aggregate
Property Damage	$500,000	for each occurrence
	$500,000	aggregate

11.7.3 Automobile Liability Insurance

Minimum coverage to be:

Bodily Injury	$1,000,000	for each person
	$1,000,000	for each occurrence
Property Damage	$500,000	per accident

11.7.4 Prime Contractor's and Subcontractors' policies shall include contingent and contractual liability coverage in the same minimum amounts as 11.7.1 above.

11.7.5 Workmen's Compensation (including Employer's Liability):

11.7.5.1 Minimum Limit on employer's liability to be as required by law.

11.7.5.2 Minimum Limit for all employees working at one site.

11.7.6 Certificates of Insurance must be filed with the Owner guaranteeing fifteen (15) days prior notice of cancellation, non-renewal, or any change in coverages and limits of liability shown as included on certificates.

11.7.7 Social Security Liability

11.7.7.1 With respect to all persons at any time employed by or on the payroll of the Contractor or performing any work for or on their behalf, or in connection with or arising out of the Contractor's business, the Contractor shall accept full and exclusive liability for the payment of any and all contributions or taxes or unemployment insurance, or old age retirement benefits, pensions or annuities now or hereafter imposed by the Government of the United States and the State or political subdivision thereof, whether the same be measured by wages, salaries or other remuneration paid to such persons or otherwise.

"NOT FOR BIDDING"

11.7.7.2 Upon request, the Contractor shall furnish Owner such information on payrolls or employment records as may be necessary to enable it to fully comply with the law imposing the aforesaid contributions or taxes.

11.7.7.3 If the Owner is required by law to and does pay any and/or all of the aforesaid contributions or taxes, the Contractor shall forthwith reimburse the Owner for the entire amount so paid by the Owner.

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.1 The Contractor shall promptly correct Work rejected by the Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed, and shall correct any Work found to be not in accordance with the requirements of the Contract Documents within a period of two years from the date of Substantial Completion, or by terms of an applicable special warranty required by the Contract Documents. The provisions of this Article apply to work done by Subcontractors as well as to Work done by direct employees of the Contractor.

12.2 At any time during the progress of the work, or in any case where the nature of the defects shall be such that it is not expedient to have them corrected, the Owner, at their option, shall have the right to deduct such sum, or sums, of money from the amount of the contract as they consider justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1 CUTTING AND PATCHING

13.1.1 The Contractor shall be responsible for all cutting and patching. The Contractor shall coordinate the work of the various trades involved.

13.2 DIMENSIONS

13.2.1 All dimensions shown shall be verified by the Contractor by actual measurements at the project site. Any discrepancies between the drawings and specifications and the existing conditions shall be referred to the Owner for adjustment before any work affected thereby has been performed.

13.3 LABORATORY TESTS

13.3.1 Any specified laboratory tests of material and finished articles to be incorporated in the work shall be made by bureaus, laboratories or agencies approved by the Owner and reports of such tests shall be submitted to the Owner. The cost of the testing shall be paid for by the Contractor.

13.3.2 The Contractor shall furnish all sample materials required for these tests and shall deliver same without charge to the testing laboratory or other designated agency when and where directed by the Owner.

13.4 ARCHAEOLOGICAL EVIDENCE

"NOT FOR BIDDING"

13.4.1 Whenever in the course of construction, any archaeological evidence is encountered on the surface or below the surface of the ground, the Contractor shall notify the authorities of the Delaware Archaeological Board and suspend work in the immediate area for a reasonable time to permit those authorities, or persons designated by them, to examine the area and ensure the proper removal of the archaeological evidence for suitable preservation in the State Museum.

13.5 GLASS REPLACEMENT AND CLEANING

13.5.1 The General Contractor shall replace without expense to the Owner all glass broken during the construction of the project. If job conditions warrant, at completion of the job the General Contractor shall have all glass cleaned and polished.

13.6 WARRANTY

13.6.1 For a period of two (2) years from the date of substantial completion, as evidenced by the date of final acceptance of the work, the contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material or workmanship performed by the contractor or any of his subcontractors or suppliers. However, manufacturer's warranties and guarantees, if for a period longer than two (2) years, shall take precedence over the above warranties. The contractor shall remedy, at his own expense, any such failure to conform or any such defect. The protection of this warranty shall be included in the Contractor's Performance Bond.

ARTICLE 14: TERMINATION OF CONTRACT

14.1 If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents or fails to perform a provision of the Contract, the Owner, after seven days written notice to the Contractor, may make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. Alternatively, at the Owner's option, and the Owner may terminate the Contract and take possession of the site and of all materials, equipment, tools, and machinery thereon owned by the Contractor and may finish the Work by whatever method the Owner may deem expedient. If the costs of finishing the Work exceed any unpaid compensation due the Contractor, the Contractor shall pay the difference to the Owner.

14.2 "If the continuation of this Agreement is contingent upon the appropriation of adequate state, or federal funds, this Agreement may be terminated on the date beginning on the first fiscal year for which funds are not appropriated or at the exhaustion of the appropriation. The Owner may terminate this Agreement by providing written notice to the parties of such non-appropriation. All payment obligations of the Owner will cease upon the date of termination. Notwithstanding the foregoing, the Owner agrees that it will use its best efforts to obtain approval of necessary funds to continue the Agreement by taking appropriate action to request adequate funds to continue the Agreement."

END OF GENERAL REQUIREMENTS

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STATE OF DELAWARE REQUIRED LANGUAGE (10-18-99)

The following language must be included in the front end of all Project Manuals:

RETAINAGE

Per Section 6962(d)(5) a., Title 29, Delaware Code: The agency may at the beginning of each public works project establish a time schedule for the completion of the project. If the project is delayed beyond the completion date due to the contractor s failure to meet his or her responsibilities, the agency may hold permanently, at its discretion, all or part of the contractor s retainage.

The forfeiture of retainage also applies to the timely completion of the punch list. A punchlist will only be prepared upon the mutual agreement of the Owner, Architect and Contractor. Once the punchlist is prepared, all three parties will by mutual agreement, establish a schedule for it s completion. Should completion of the punchlist be delayed beyond the established due date to the contractor s failure to meet his or her responsibilities, the agency may hold permanently, at its discretion, all or part of the contractor s retainage.

ACCEPTANCE OF BID and CONTRACT AWARD

Per Section 6962(d)(13) a., Title 29, Delaware Code, The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible bidder, unless the agency elects to award on the basis of best value, in which case the election to award on the basis of the best value shall be stated in the invitation to bid.

"NOT FOR BIDDING"

Each bid on any public works contract must be deemed responsive by the agency to be considered for award. A responsive bid shall conform in all material respects to the requirements and criteria set forth in the contract plans and specifications.

An agency shall determine that each bidder on any public works contract is responsible before awarding the contract. Factors to be considered in determining the responsibility of a bidder include:

1) The bidder s financial, physical, personnel or other resources including subcontracts;

2) The bidder s record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations or prevailing wage laws in Delaware or any other state;

3) The bidder s written safety plan;

4) Whether the bidder is qualified legally to contract with the State;

5) Whether the bidder supplied all necessary information concerning its responsibility; and, any other specific criteria for a particular procurement, which an agency may establish; provided however, that, the criteria be set forth in the invitation to bid and is otherwise in conformity with State and/or federal law.

If an agency determines that a bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected bidder within five (5) working days of said determination. The final determination shall be made part of the procurement file.

SUSPECTION and DEBARMENT

Per Section 6962(d)(14), Title 29, Delaware Code: Any contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the agency in the invitation to bid, may be subject to suspension or debarment for one or more of the following reasons:

1) Failure to supply the adequate labor supply ratio for the project;

2) Inadequate financial resources; or,

3) Poor performance on the project.

Upon such failure for any of the above stated reasons, the agency that contracted for the public works project may petition the Secretary of the Department of Administrative Services for suspension or debarment of the contractor. The agency shall send a copy of the petition to the contractor within three (3) working days of filing with the Secretary. If the Secretary concludes that the petition has merit, the Secretary shall schedule and hold a hearing to determine whether to suspend the contractor, debar the contractor or deny the petition. The agency shall have the burden of proving, by a preponderance of the evidence, that the contractor failed to perform or complete the public works project within the time schedule established by the agency and failed to do so for one or more of the following reasons:

"NOT FOR BIDDING"

1) Failure to supply the adequate labor supply ratio for the project;

2) Inadequate financial resources; or,

3) Poor performance on the project.

Upon a finding in favor of the agency, the Secretary may suspend a contractor from bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3-years for a second offense and permanently debar the contractor for a third offense. The Secretary shall issue a written decision and shall send a copy to the contractor and the agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.

2018 Asbestos Abatement at North Laurel Elementary School
Laurel, Delaware 19956

GENERAL SPECIFICATIONS

The following information must be considered by the Contractor when preparing their bid:

GENERAL REQUIREMENTS

1. Laurel School District (Owner) reserves the right to aware this project to the Contractor with the best Base Bid amount or Base Bid plus any Alternate bid item amount which the Owner feels is in the best interest of the Owner.

2. The unit prices listed on the bid form could be used to adjust the Contractor's base bid, add or deduct, for changes in quantities on the project. However, the Owner reserve the right to accept or reject these listed unit prices and ask the Contractor to provide other pricing based upon project conditions.

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SUBMITTALS

All submittal information is to be included in the bid.

1. Contractor Certificate of Liability Insurance. Minimum coverage is as follows:

   a. $1 Million combined single limit automobile liability, either " any auto" or scheduled hired and non-owned automobile coverage.
   b. $1 million per occurrence general liability plus $w million aggregate general liability.
   c. Evidence of employer liability insurance: $100,000 each accident, $500,000 disease each employee, $1000,000 disease policy limit.
   d. Workmen's Compensation Insurance: Statutory workmen's compensation limit box checked.
   e. Asbestos liability insurance of $1 million per occurrence with 5-year indemnification clause if a claims made policy.
   f. Listed as additionally insured: Laurel School District and Envirotech Environmental Consulting, Inc.
   g. A waiver of subrogation in favor of Laurel School District and Envirotech Environmental Consulting, Inc.

Please note that the insurance carrier must be financially reliable, at a minimum rated A – Class VII by AM Best.

DOCUMENTATION TO BE SUBMITTED PRIOR TO THE START OF WORK

1. Certificate of Site Worker's Acknowledgment Form.
2. Hard copies of valid supervisor and worker asbestos certifications, licenses, and medical clearance documentation.
3. EPA and DNREC ten-day notification.
4. All other required submittals in this specification.

DOCUMENTATION TO BE SUBMITTED PRIOR FINAL PAYMENT

1. Signed Certification of Visual Inspection and Acceptance Inspection Form.
2. Contractor signed Affidavit of Payment of Debts/Claims (AIA G706 Form).
3. Contractor signed Affidavit of Release of Liens (AIA G706A Form).
4. Copy of Daily Logs.
5. Waste Disposal Documentation.

END OF GENERAL SPECIFICATIONS

"NOT FOR BIDDING"

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: 302 761 8200

Mailing Address:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

Located at:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

PREVAILING WAGES FOR **BUILDING CONSTRUCTION** EFFECTIVE MARCH 15, 2018

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	23.35	28.76	41.85
BOILERMAKERS	69.90	35.46	52.14
BRICKLAYERS	53.89	53.89	53.89
CARPENTERS	54.81	54.81	43.57
CEMENT FINISHERS	73.74	51.37	22.64
ELECTRICAL LINE WORKERS	46.44	39.82	30.36
ELECTRICIANS	68.70	68.70	68.70
ELEVATOR CONSTRUCTORS	93.23	65.86	32.62
GLAZIERS	73.10	73.10	57.87
INSULATORS	56.53	56.53	56.53
IRON WORKERS	63.70	63.70	63.70
LABORERS	46.20	46.20	46.20
MILLWRIGHTS	71.60	71.60	57.70
PAINTERS	51.55	51.55	51.55
PILEDRIVERS	[illegible]	[illegible]	32.51
PLASTERERS	[illegible]	[illegible]	22.59
PLUMBERS/PIPEFITTERS/STEAMFITTERS	70.05	53.97	58.81
POWER EQUIPMENT OPERATORS	69.29	69.29	64.96
ROOFERS-COMPOSITION	24.52	24.20	22.10
ROOFERS-SHINGLE/SLATE/TILE	18.78	22.33	17.56
SHEET METAL WORKERS	68.53	68.53	68.53
SOFT FLOOR LAYERS	52.52	52.52	52.52
SPRINKLER FITTERS	59.49	59.49	59.49
TERRAZZO/MARBLE/TILE FNRS	61.93	61.93	48.52
TERRAZZO/MARBLE/TILE STRS	68.52	68.52	56.19
TRUCK DRIVERS	29.36	28.02	21.39

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CERTIFIED: 4/13/18 BY: [signature]
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE 302 761 8200

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: 201786.00 North Laurel Elementary School Renovation , Sussex County

PART III

TECHNICAL SPECIFICATIONS

"NOT FOR BIDDING"

DIVISION 1 – GENERAL SPECIFICATIONS

ENVIROTECH ENVIRONMENATAL CONSULTING, INC.

SECTION 01013 - SUMMARY OF THE WORK - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. All work associated with this project is to be performed in accordance with this Specification EECI-092618 (dated September 26, 2018) as prepared by Envirotech Environmental Consulting, Inc. (EECI).

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. **The Project** consists of the removal, packaging, transportation and disposal, of designated asbestos materials as indicated within this Technical Specification.

1. **Project Name:** Asbestos Abatement at North Laurel Elementary School, Main Corridor Classrooms and Hallway.
2. **Project Number:** EECI-092618
3. **Project Location:** North Laurel Elementary School, 600 Wilson Street, Laurel, Delaware 19956.
4. **Owner:** Laurel School District, 1160 South Central Avenue, Laurel, Delaware 19956.
5. **Owner's Representative:** Envirotech Environmental Consulting, Inc.
6. **Work Period:** All work activities must be started on December 10, 2018, and completed by January 31, 2019.
7. **Liquated Damages:** Liquated damage rates will be assessed at $1,000.00 each calendar day after the project end date (January 31, 2019) for this project.

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B. **Contract Documents**, dated September 26, 2018, and were prepared for the project by EECI, 17605 Nassau Commons Boulevard – Unit D, Lewes, Delaware 19956. Conditions are indicated on the Contract Documents include, but are not limited to this specification, drawings, and any addenda to the specifications.

C. **The Work** consist of the removal of asbestos floor tile, blackboard glue dots, and pipe insulation and fittings at the locations shown on the drawings.

1. **Work to be Performed Under This Contract:** includes the complete removal and disposal of asbestos-containing floor tiles, blackboard glue dots, and pipe insulation and fittings as shown on the drawings. Please refer to the bulk sampling reports dated February 24 and September 12, 2018 in Appendix D of this Specification.

2. **Project Notices:** The Contractor shall provide and post on-site the following:

   a. U.S. EPA 10-Day Notification
   b. State of Delaware DNREC 10-Day Notification
   c. Emergency Planning Procedures
   d. Safety Data Sheets
   e. Prevailing Wage Rate Information/Determination
   f. Equal Employment Opportunity
   g. Supervisor and Worker Badges
   h. Subcontractor List (if applicable)

3. **Work to be performed Prior to Work Under This Contract:** The building Owner will remove all movable objects in the work area prior to pre-cleaning activities. The Contractor will install temporary wood barriers at hallway entrances to prevent unauthorized entry into the work areas.

4. **Submittals Prior to the Start of Work:** The Contractor shall provide the following documents to the Owner's Representative prior to asbestos clean-up activities.

   a. Certificate of Liability Insurance.
   b. Complete Certificate of Site Worker's Acknowledgement Forms (Section 01561).
   c. Complete list of Project Supervisors and Workers including names and addresses.
   d. Fit test results, medical results, and certifications for Project Supervisors and Workers.

5. **Bonds:** Performance, payment, and bid bonding are required for this project. The awarded Contractor is responsible for completing the required forms attached in this Specification.

6. **Abatement Activities:** All abatement of asbestos-containing materials shall be performed in a proper wetted condition using amended water. Dry removal of asbestos-containing materials is not permitted.

7. **Specifications:** A copy of this specification and all associated contract addendums shall be maintained on-site at all times throughout the duration of the project.

8. **Presumed Asbestos-Containing Materials:** Presumed asbestos pipe insulation and fittings may be located in interstitial spaces in the work area. The Contractor is responsible for performing intrusive methods (at known water sources) to determine if presumed ACBMs are located in the work area.

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9. **Project Supervisor:** During all asbestos abatement work, a State of Delaware licensed Supervisor shall be on-site at times.

10. **Contractor Staffing:** A minimum of three (3) asbestos personnel are required to be present at the project site at all times.

11. **Project Monitor:** The Contractor shall not begin or continue work for any asbestos abatement related activity until a certified Project Monitor is on-site. The project monitor must be on-site at all time during work related activities.

12. **Ten-Day Notification:** The Contractor shall submit the required ten-day notification of asbestos abatement activities to the EPA and DNREC for this project. A copy of the submitted notification shall be provided to the Owner's Representative prior to the start of work.

13. **Ventilation Systems:** The Contractor shall verify that all ventilation systems are completely immobilized by the Owner. The Contactor shall at minimum, seal all supply and return ducts with critical barriers, locking and tagging the system "off" as per OSHA Standards, notifying the building operators, and providing proper labeling.

14. **Payment Request:** The Owner's Representative shall review and recommend payment of all invoices from the Contractor. Invoices shall be submitted by the Contractor in a form acceptable to both the Owner's Representative.

15. **Critical Barriers:** Critical barriers consisting of two (2) single layers of 6-mil polyethylene sheeting applied separately by the Contractor with varying tape lines shall be installed, as a minimum, at ventilation systems, doors, windows, electrical wall switches and receptacle, and other openings in the work area.

16. **Negative Air Machines:** Establish a negative pressure differential within the containment system of at least -0.02 inches of water prior to and during all work activities. The Contractor is responsible for changing the air filters as needed. The pressure differential recorder (manometer) shall be checked several times a day by the Contractor to verify readings. Work will not begin or continue until an adequate differential pressure is achieved and maintained.

17. **Unit Prices:** No unit prices are to be provided by the Contractor.

18. **Respiratory Protection:** PAPR respiratory protection shall be used during all phases the contract.

19. **Measurements and Dimensions:** It is the Contractor's responsibility to verify all measurements prior to the openings of the bids. Any discrepancies in the measurements or work site conditions must be made prior to the bid opening.

20. **Work Area Security and Protection:** In performing the work, the Contractor is responsible for securing the work are including all equipment, materials, etc. The Owner will open and close (secure) the building each work day. The Contractor shall prevent entry from unauthorized people. Contractors is required to barricade all doors and access ways to prevent accidental entry into work areas.

21. **Floor Tile Machines:** The use of floor tile machines is not permitted on this project unless written approval is provided by the State of Delaware to the Owner's Representative 72-hours prior to the start of work.

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22. **Aggressive Air Sampling:** The Contractor shall provide, at no additional cost to the Owner, a leaf blower and fans required by the Owner's Representative to perform aggressive air sampling.

23. **Air Sampling:** All baseline and daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance sampling will be performed Transmission Electron Microscopy (TEM).

24. **Bag-Out:** Bag-out activities shall be performed by the Contractor prior to the end of each work day. All waste must be removed from the work areas each day. At no time will the decontamination unit be used as a bag-out. All bags shall have a "goose neck" seal and labeling. At no time will the workers be allowed to move around outside the work areas except when they are performing bag-out activities.

25. **Waste Disposal:** All asbestos waste will be disposed of in accordance with State and Federal regulations. All asbestos-containing materials shall be disposed by the Contractor as asbestos-containing waste at the Delaware Solid Waste Authority-Cherry Island Landfill, 1706 East 12th Street, Wilmington, Delaware 19809.

26. **Wood Partitions:** The Contractor shall install wood partitions at all locations shown on the drawings. The Contactor shall maintain the integrity of the wood partitions until project completion. All required labels and signage shall be applied to the wood partitions by the Contractor.

27. **Exhaust from Negative Air Machines:** Windows or other building openings used to exhaust negative air shall be protected by the Contractor by installing plywood if the opening is located on the first floor or below.

28. **Lock Down:** All non-visible asbestos residue shall be encapsulated with a coating of penetrating encapsulant applied as per manufactures recommendations.

29. **Use of Drawings:** The drawings in this specification are intended for reference purposes. The Contractor is responsible for determining actual quantities of all asbestos-containing materials associated with this specification and consider applying to their bid accordingly.

30. **Decontamination Units:** Three (3) stage decontamination units will be installed in a secure manner by the Contractor. The decontamination units will be maintained during all work activities and removed upon project completion. At no time will equipment moved out of the decontamination units. No "pop-up" decontamination units will be allowed unless approved in writing. The decontamination unit(s) will consist of a clean room, shower, and dirty room.

31. **Electric (Power):** The Owner will provide low power electric service for the entire length of the project. If required by the Contractor, a licensed electrician shall be provided, at no additional cost, form installing connections and disconnections.

32. **Water Service:** The Owner shall provide non-potable water sources for this project. The Contractor shall provide all necessary water service connection devices and equipment at no additional cost to the Owner. The Contractor must install a back-flow-preventer on all used water service hook-ups. The Contractor is solely responsible for turning on and off vales at the point of connection for each water service hook-up.

33. **Scaffolding, Lifts, and Ladders:** If scaffolding is used, the Contractor must erect, used and disassemble the scaffolding in accordance with OSHA standards. Additionally, all lifts and ladders shall meet and be used in accordance with OSHA Standards. The Contactor shall insure that floors and all other building components are protected during the use of scaffolding, lifts, and ladders.

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34. **Permanent Objects in the Work Area:** The Contractor shall at all times conduct work activities in a manner to prevent damage to permanent objects in the work area.

35. **Building Property and Usage:** The Contractor shall keep a clean and neat work area during all work activities. All materials must be stored in a central location determined by the Owner. If additional storage is needed, the Contractor at no additional cost to the Owner shall provide an off-site storage space.

36. **Damage to Building Property:** The Contractor shall repair or replace, at his or her own expense, any damage occurred from activities performed on-site. The Contractor shall take the necessary precautions to protect all electronic equipment (including wires) and building sensors from damage during the Contractor's activities.

37. **Visitor Personal Protective Equipment**: The Contractor shall provide at no additional cost to the Owner or Owner's Representative, respirators, disposable coveralls, and head and foot covers all in new conditions.

38. **Baseboard Glue:** Vinyl baseboards will be removed in a manner to limit possible damage to block surfaces.

39. **Stop Work:** If the Owner or the Owner's Representative provides a written stop work order to the Contractor, the Contractor shall immediately stop work in a manner not to create an asbestos exposure hazard to workers, building occupants, and others.

40. **Break-In Points**: The Contractor is responsible for breaking into the concrete walls at known water sources in the work area. The Contractor is responsible for removing all interstitial asbestos located in the walls and ceiling areas in the work area. Remove block wall at each location show on drawing number 5. The Contractor shall remove the block building material to approximately three (3) vertical-feet from the ground surface in the area of the plumbing to visibly view the exposed piping. The Contractor must remove all block as described above in a safe manner. If at any time the integrity of the wall is compromised, the Contractor will stop work immediately and safely exit the work area in a timely manner.

41. **Disposal of Non-ACBM Materials:** The non-asbestos-containing building materials listed in Table No. 3 may be disposed of as non – asbestos general construction and demolition waste. If at any time the on-site project monitor determines that these materials may have or have been contaminated with asbestos fibers, the contaminated building materials must be disposed of as asbestos waste.

D. **Single Prime Contract:** This work will be constructed under a single prime contract. Please note that re-insulation, tile replacement, and ceiling tile replacement are not part of this contract.

1.3 WORK SEQUENCE

A. **The Work** will be conducted in distinct phases at each work area location.

1. Each work phase shall consist of pre-cleaning, establishing work areas, install of engineer controls, clean-up, pre-sampling clean-up, and sampling.
2. The following inspections will be performed by the Contractor and Owner's Representative simultaneously.

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   a. Pre-Cleaning: The work area will be cleaned prior to installing polyethylene sheeting on walls, floors, other surfaces. Decontamination units must be operable and critical barriers installed prior to pre-cleaning activities.
   b. Work Area(s): Work area will be visual inspected prior to the start of work, periodically throughout the day, and at the completion of each day to ensure the integrity of the containment is in compliance with this specification.
   c. Post Clean-Up: A visual inspection of each work area will be performed following successful clearance air sampling and prior to commencing containment tear-down.
   d. Substantial Completion: After all other asbestos clean-up activities, a final inspection will be performed after final cleaning of all work areas prior to re-occupancy of phase work by the Owner.

1.4 ASBESTOS-CONTAINING MATERIALS:

A. **The Work** of this contract involves activities that will disturb asbestos-containing materials (ACM). The location and type of ACM known to be present at the worksite is set forth in the "Schedule of Asbestos-Containing Materials" at the end of this section. If any other ACM or PACM is found, notify the owner, other employers and employees about the location and quantity of the ACM or PACM within 24 hours of the discovery.

B. The following asbestos-containing materials are known to be present at the work site. If the Contractors finds any other material(s) suspected to be asbestos containing, the Contractor shall immediately notify the Owner's Representative.

1. 9"x9" Floor Tile on Concrete…….……..…5-8% Chrysotile.
2. 9"x9" Floor Tile on Concrete Under Carpet……8% Chrysotile.
2. Pipe Insulation and Pipe Fittings……..…4% Chrysotile, 15% Amosite, and 5% Crocidolite.
3. Blackboard/Wallboard Glue Dots……..……..……4% Chrysotile.

1.5 ASBESTOS HEALTH RISK:

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

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

1.6 CONTRACTOR USE OF PREMISES

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A. **General:** During the construction period the Contractor shall have limited use of the facility.

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

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

C. **Use of the Existing Building:** Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1. **Use of Existing Elevators (if applicable):** Except for the Freight Elevator, use of elevators by the Contractor will not be permitted. The Contractor will be permitted to use the freight elevator for temporary freight service and the transportation of construction personnel during the construction period. This elevator must also be available to the Owner at all times; coordinate freight elevator usage with the Designer. Provide protective pads for the elevator car and other appropriate protective measures for the car and entrance doors and frames. During asbestos abatement activities the car is to be protected as set forth in the Division 1 Section on Temporary Enclosures.

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

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

1.7 OCCUPANCY REQUIREMENTS

A. **Partial Owner Occupancy:** The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Designer will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.

1.8 AIR MONITORING BY THE OWNER:

A. **The Owner has contracted for air monitoring.** Air monitoring may be conducted both outside and inside of the work area during the work, and for clearance sampling at the end of the project.

1. **Outside of the Work Area:** The Owner's air monitoring firm may sample air outside of the work area to detect faults in the work area isolation such as:

a. Contamination of the building outside of the work area with airborne asbestos fibers,
b. Failure of filtration or rupture in the differential pressure system,
c. Contamination of air outside the building envelop with airborne asbestos fibers.

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2. **Inside the Work Area:** The Owner's air monitoring firm may monitor airborne fiber counts in the Work Area. The purpose of this air monitoring is to detect airborne asbestos concentrations which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

B. **Work area clearance:** Clearance air sampling by the Owner's air monitor at the completion of asbestos abatement work is described in Section 01711 Project Decontamination.

C. **Air monitoring** required by OSHA is work of the Contractor and is not covered in this section.

1.9 SCHEDULE OF AIR SAMPLES BY OWNER:

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

1. **PCM:** 0.8 micrometer mixed cellulose ester.

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

B. **Number and Volume of Samples:** The number and volume of air samples given in the schedules is approximate. The exact number and volume of samples collected by the Owner may vary depending upon job conditions and the analytical method used.

C. **Sample Volume and Sensitivity:**

1. **PCM:** The sample volumes collected by the Owner's air monitor will be determined by the following formula:

$$Volume = \frac{\left(\frac{Number\ of\ Fibers}{Area\ of\ 100\ fields}\right) X\ Total\ Filter\ Area}{\left(\frac{Limit\ Value}{4}\right)}$$

Where:

Number of fibers	=	5 fibers/100 fields, based on a limit of detection (LOD) of 7 fibers/mm^2 on the filter
Area of 100 fields	=	0.785mm^2
Total Filter Area	=	385mm^2
Limit Value	=	as specified in the schedules of samples below

a. For purposes of this specification, the sample volume calculated above will be considered to be of sufficient size so that there is a 95% level of confidence that the value measured by each individual sample at the limit of detection (LOD) is less than or equal to the limit values specified below.

b. For purposes of this specification, the Limit of Detection (LOD) is defined as 7 fibers/mm^2 on the filter or 5 fibers/100 fields.

c. For purposes of this specification overloaded samples will be considered as exceeding the applicable limit value.

2. TEM: Analytical Sensitivity of 0.05 structures/cc as set forth in the AHERA regulation.

D. Base Line:

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1. Before Start of Work: The Owner will secure air samples to establish a base line.

2. PCM Samples

Location Sampled	Number of Samples	Limit Value (Fibers/cc)	Approx. Volume (Liters)	Rate (Liters/ Minute)
Each Work Area	5	0.01	*<1,000>*	1-10
Outside Each Work Area	5	0.01	*<1,000>*	1-10
Outside Building	5	0.01	*<1,000>*	1-10

3. **TEM Samples:**

Location Sampled	Number of Samples	Analytical Sensitivity (Struct./cc.)	Approx. Volume (Liters)	Rate (Liters/ Minute)
Each Work Area	1	0.005	1,300	1-10
Outside Each Work Area	1	0.005	1,300	1-10
Outside Building	1	0.005	1,300	1-10

4. **Base Line:** a level expressed in fibers per cubic centimeter which is twenty-five percent greater than the largest of the following:
   a. Average of the PCM samples collected outside each Work Area
   b. Average of the PCM samples collected outside the building
   c. 0.01 fibers per cubic centimeter

5. **Samples collected for TEM analysis** will be held without analysis. These samples will be analyzed under the conditions and terms set forth in "Fibers Counted" and "Affect On Contract Sum".

E. **Daily:** "NOT FOR BIDDING"

1. **From start of work** of Section 01526 Temporary Enclosures through the work of Section 01711 Project Decontamination, the Owner may take samples.

2. **Sample volume and sensitivity:** inside the work area may vary depending upon conditions in the work area. If samples are overloaded at the sample volume required for a limit value equal to the “Stop Action Levels” or “Immediate Stop Action Levels” given later in this section, the level is considered to have been exceeded.

3. **PCM Samples:**

Location Sampled	Number of Samples	Limit Value (Fibers/cc)	Approx. Volume (Liters)	Rate (LPM)
Each Work Area	2	*<0.1>*	*<100>*	1-10
Outside Each Work Area at Critical Barrier	1	0.01	*<1,000>*	1-10
Clean Room	1	0.01	*<1,000>*	1-10
Equipment Decon	1	0.01	*<1,000>*	1-10
Outside Building	1	0.01	*<1,000>*	1-10
Output of Pressure Differential System	1	0.01	*<1,000>*	1-10

F. **Additional samples** may be taken at Owner's or Designer's discretion. If airborne fiber counts exceed allowed limits additional samples may be taken as necessary to monitor fiber levels.

1.10 ANALYTICAL METHODS USED BY THE OWNER:

A. The following methods will be used by The Owner in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

1. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 method.
2. Transmission Electron Microscopy (TEM) will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

1.11 LABORATORY TESTING BY OWNER:

A. **The services of a testing laboratory** may be employed by the Owner to perform laboratory analyses of the air samples. Samples collected for analysis will be sent daily from Sussex County Delaware via a carrier for next day delivery to the designed laboratory, so verbal results data on air samples can be obtained within 24-hours after receipt by the laboratory.

B. **A complete record** of all air monitoring and results will be furnished to the Owner's Representative, the Owner, and the Contractor.

C. **The Contractor will have access** to all air monitoring tests and results upon request.

D. **Written Reports:** of all air monitoring tests will be posted at the job site on a daily basis.

E. **Additional Clearance Air Samples** (if applicable): Re-sampling of clearance areas due to Contractor activities will be paid for by the Contractor. This includes all time and materials provided by the Owner's Representative.

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1.12 FIBERS AND STRUCTURES

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

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

2. **Small Structures:** "Airborne Fibers" referred to above include asbestos structures (fibers, bundles, clusters or matrices) of any diameter and any length greater than 0.5 microns.

1.13 ADDITIONAL TESTING:

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

1.14 PERSONAL MONITORING:

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

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 STOP ACTION LEVELS:

A. **Inside Work Area:** Maintain an average airborne count in the Work Area of less than 0.5 fibers per cubic centimeter. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work

shift or 8 hour period exceeds 0.5 fibers per cubic centimeter, stop all work, leave Pressure Differential System in operation and notify Designer. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Designer.

Table No. 1: Action Level and Stop Action Level Concentrations.

Action Level (Max Exposure) (f/cc)	Stop Level (f/cc)	Respirator	Respirator Assigned Protection Factor
1	0.5	Half Face	10
100	50	PAPR	1,000
100	50	Supplied Air, Pressure Demand	1,000

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

2. The Contractor will stop work immediately if any visual emissions are observed.

B. **Outside Work Area:** If any air sample taken outside of the Work Area exceeds the base line established in Part 1 of this section, immediately and automatically stop all work except corrective action. The Designer will determine the source of the high reading and so notify the Contractor in writing.

1. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

   a. Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).
   b. Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.
   c. Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01711 Project Decontamination.
   d. Leave Critical Barriers in place until completion of work and insure that the

operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.

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

f. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01711 Project Decontamination.

2. If the high reading was the result of other causes initiate corrective action as determined by the Designer.

3. The Contractor will stop work immediately if any visual emissions are observed.

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

3.2 STOP WORK:

A. If the Owner, Designer, or Project Administrator presents a written stop work order, immediately and automatically conform to that stop work order, while maintaining temporary enclosures and pressure differential. Do not recommence abatement work until authorized in writing by Owner, Designer or Project Administrator.

B. Immediately initiate the following actions: After being presented with a stop work order immediately

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1. Cease all asbestos removal activities, or any other activities that disturbs ACM.
2. Repair any fallen, ripped or otherwise failed work area isolation measures.
3. Maintain in operation all work area isolation measures including those required by Sections 01526 “Temporary Enclosures,” 01513 “Temporary Pressure Differential & Air Circulation System,” 01563 “Decontamination Units.”
4. Maintain all worker protections including those required by Sections 01560 “Worker Protection - Asbestos Abatement,” and 01562 “Respiratory Protection.”
5. Fog the air in the work area with a mist of amended water to reduce airborne fiber levels.

C. Do not recommence work until authorized in writing by the Owner or Designer.

4.1 SUMMARY OF ASBETSOS-CONTAINING MATERIALS

A. The following estimated quantities are provided. The Contractor shall verify all quantities and inform the Owner's Representative prior pre-bid meeting dismissal.

Table No. 2: Summary of Asbestos-Containing Building Materials.

Building Material	Location	Color	Friability	Approximate Quantity	Lab Sample ID	Laboratory Result
9"x9" Floor Tile on Concrete	Classrooms and Hallway	Gray and Tan	Non-Friable	6,500 SF Total	HA-1-A HA-10-A	5-8% Chrysotile
9"x9" Floor Tile on Concrete (Under Carpet)	Guidance Counselor's Office	Gray	Non-Friable	350 SF Total		
Blackboards with Glue Dots	Classrooms	Black	Non-Friable	18 Each	HA-1-A	4 % Chrysotile
Wallboard with Glue Dots	Classrooms, Hallway, and Guidance Office	Brown		14 Each		
Pipe Insulation and Fittings	Classrooms and Custodial Closet	Gray	Friable	600 LF Total	HA-7-A	15% Amosite 5% Crocidolite
					HA-17-A	3% Chrysotile
Pipe Insulation and Fittings	Interstitial Spaces in the work area	N/A	Friable	1,000 LF Total	Presumed	N/A

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B. The following estimated quantities are provided. The Contractor shall verify all quantities and inform the Owner's Representative prior pre-bid meeting dismissal.

Table No. 3: Summary of Non Asbestos-Containing Building Materials.

Building Material	Location	Color	Friability	Approximate Quantity	Lab Sample ID	Lab Result
Vinyl Baseboard	Classrooms, Bathrooms, Custodial Closet, Guidance Office and Hallway	Black	Non-Friable	1,800 LF Total	HA-3-A, B, C HA-4-A,B,C	None-Detected
Carpet	Guidance Counselor's Office	Gray	Non-Friable	350 SF Total	HA-16-A,B, C	
Plaster Walls and Ceiling	Classrooms, Bathrooms, Custodial Closet, Guidance Office and Hallway	Brown	Non-Friable	300 SF Total	HA-11-A, B, C	
Block Walls and Ceilings	Classrooms, Bathrooms, Custodial Closet, Guidance Office and Hallway	Gray	Non-Friable	1,200 SF Total	N/A	N/A
1'x1' Ceiling Tile	Classrooms and Guidance Office	White	Non-Friable	600 SF Total	HA-5-A,B,C	

NOTE: The non-asbestos-containing building materials listed in Table No. 3 may be disposed of as non – asbestos general construction and demolition waste. If at any time the on-site project monitor determines that these materials may have or have been contaminated with asbestos fibers, the contaminated building materials must be disposed of as asbestos waste.

Remove block wall at each location show on drawing number 5. The Contractor shall remove the block building material to approximately three (3) vertical-feet from the ground surface in the area of the plumbing to visibly view the exposed piping. The Contractor must remove all block as described above in a safe manner. If at any time the integrity of the wall is compromised, the Contractor will stop work immediately and safely exit the work area in a timely manner.

END OF SECTION - 01013

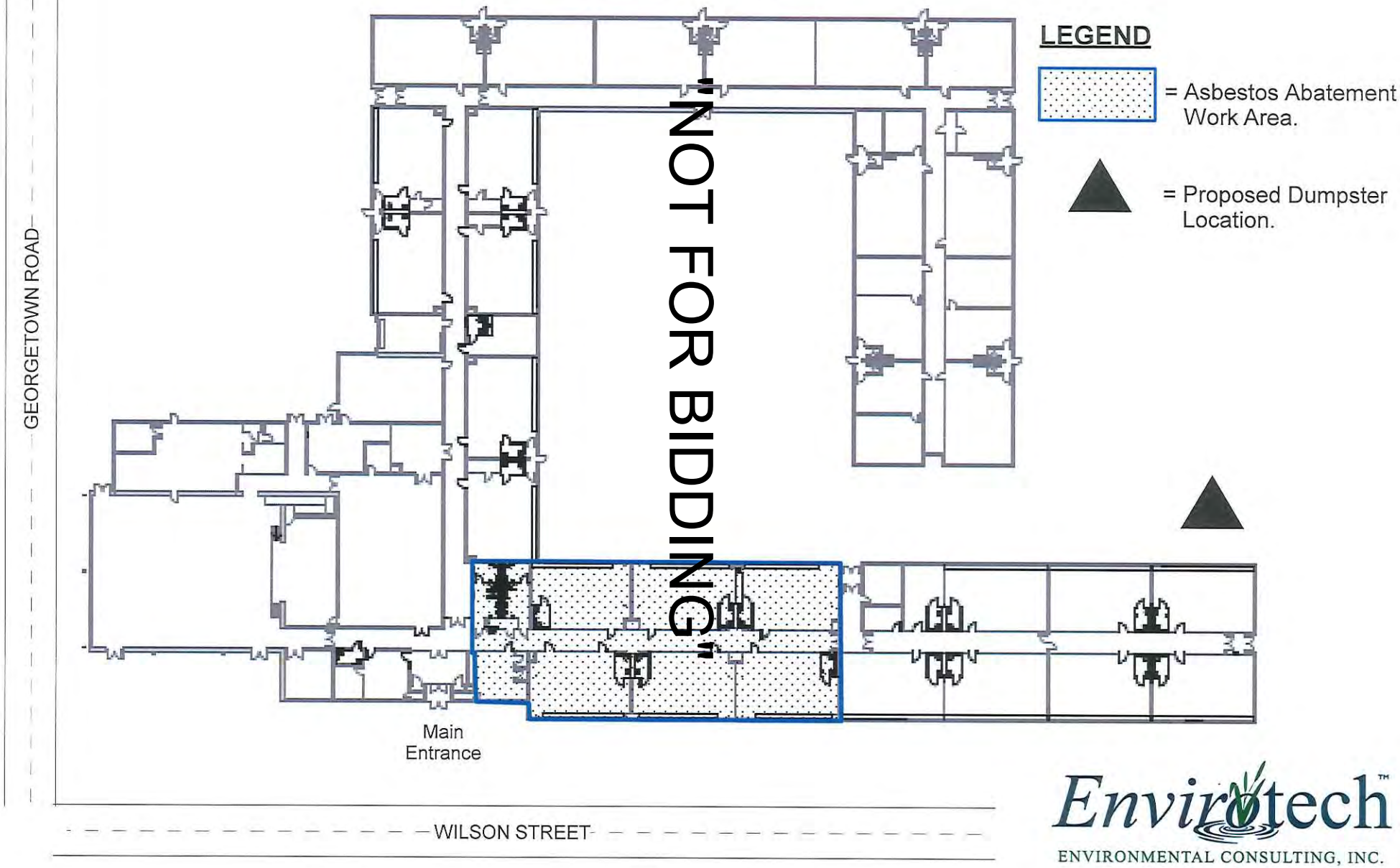
"NOT FOR BIDDING"

DRAWING 1

September 26, 2018

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS ABATEMENT - SITE LOCATION MAP

PLAN VIEW



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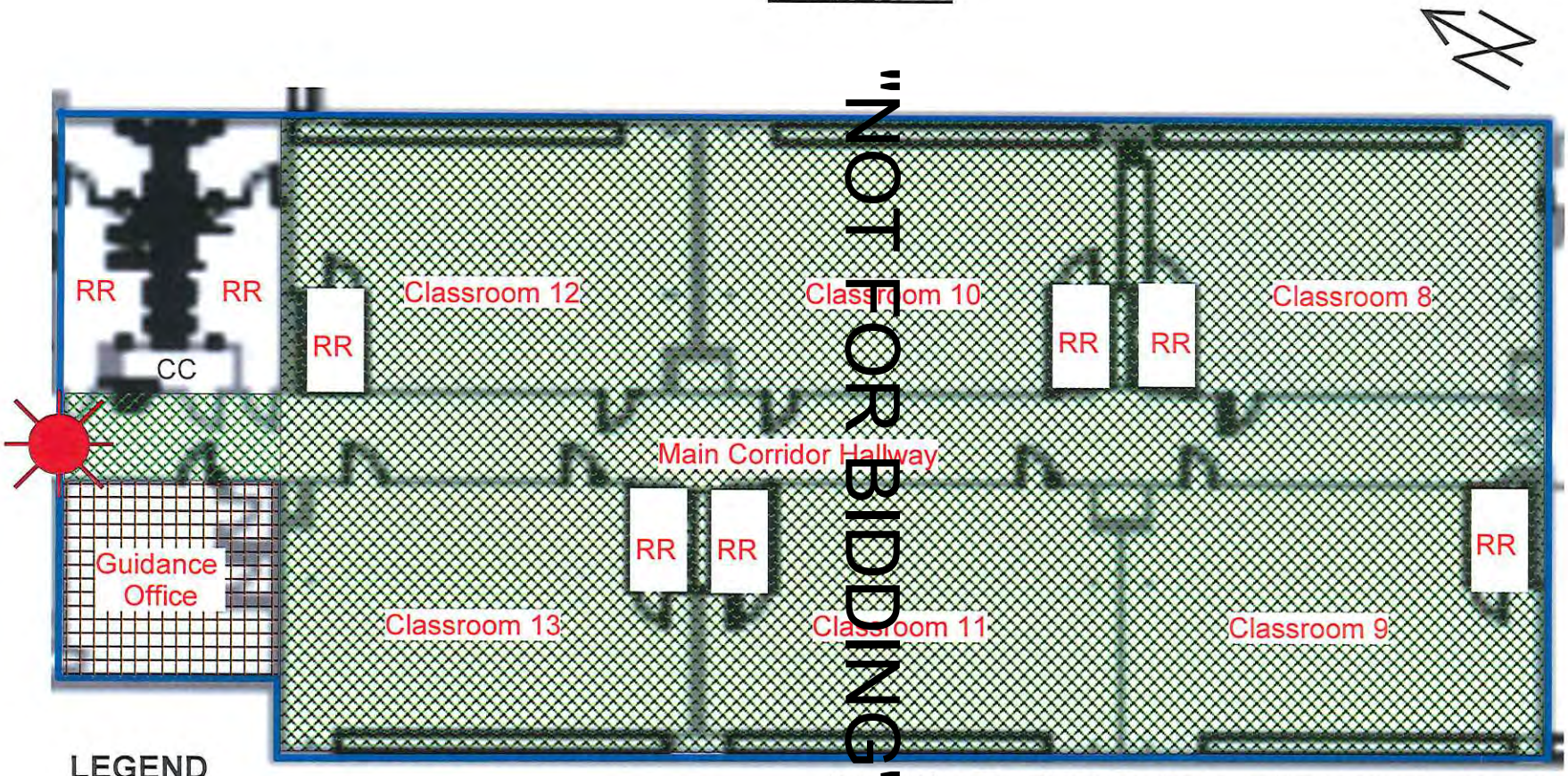
DRAWING 2
(Floor Tile)

September 26, 2018

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS ABATEMENT - SITE LOCATION MAP

PLAN VIEW



NOT FOR BIDDING

LEGEND

= Extent of Work Area.

= Remove 9"x9" Floor Tile on Concrete Under Carpet (350 SF Total)

= Remove 9"x9" Floor Tile on Conrete (6,500 SF Total)

= Location of Wood Barrier.

Note: All Non-ACBM vinyl baseboard must be removed to access all ACBMs in the work area. Non-contaminated Non-ACBM may be disposed of as general construction and demolition debris. Please refer to Table No. 3 in Section 01013 for details.

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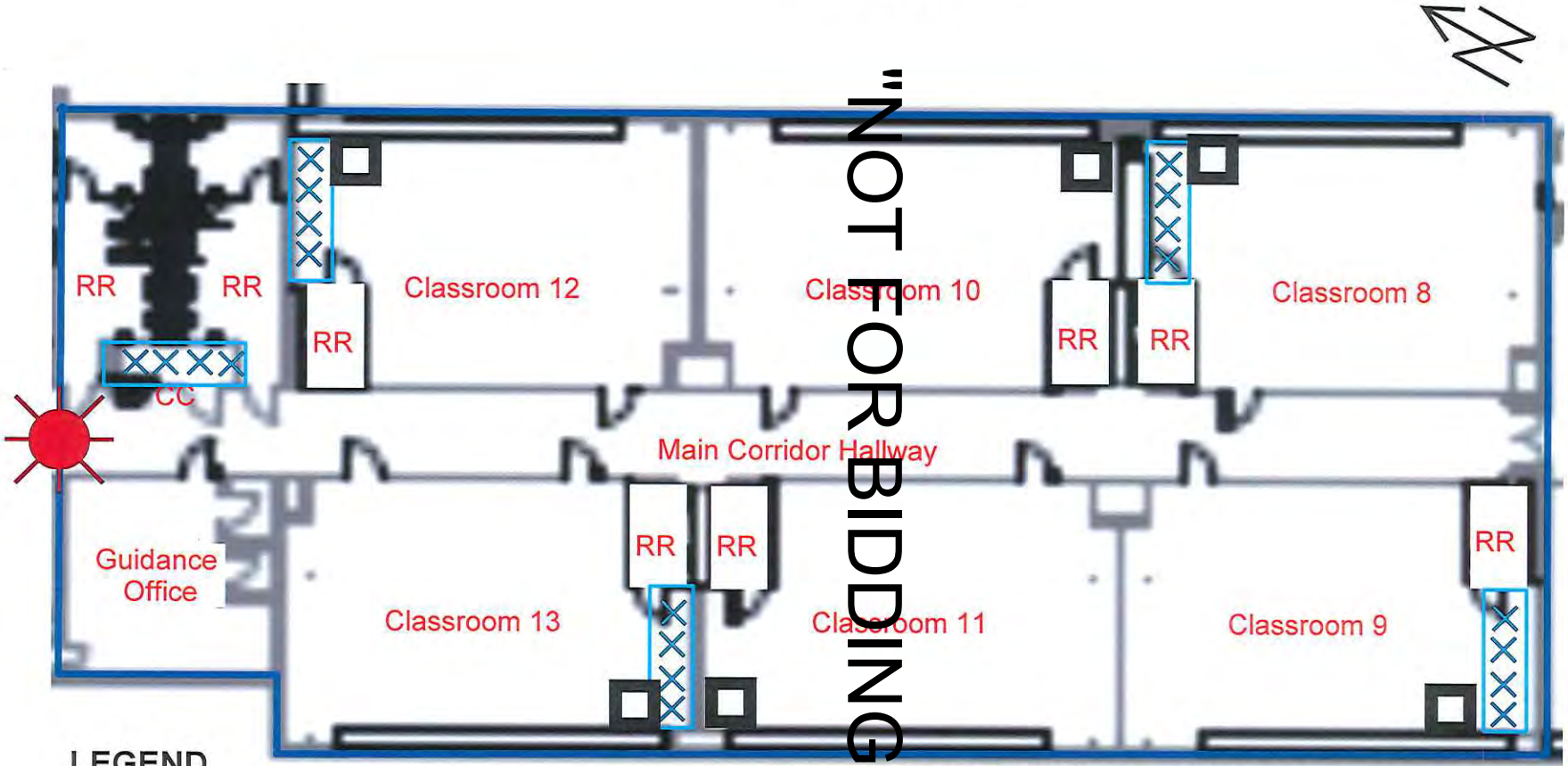
DRAWING 3
(Pipe Insulation & Pipe Fittings)

September 26, 2018

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS ABATEMENT - SITE LOCATION MAP

PLAN VIEW



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LEGEND

= Extent of Work Area.

= Remove Horizontal and Vertical Pipe Insulation and Pipe Fittings (750 LF Total)

= Location of Wood Barrier.

= Vertical Asbestos Pipe Insulation enclosed in plaster

Note: The horizontal asbestos TSI pipe insulation located in the classrooms and custodial closet is exposed. Please note that vertical asbestos TSI pipe insulation is located behind a plaster "bump-out" wall. Please refer to site photographs.

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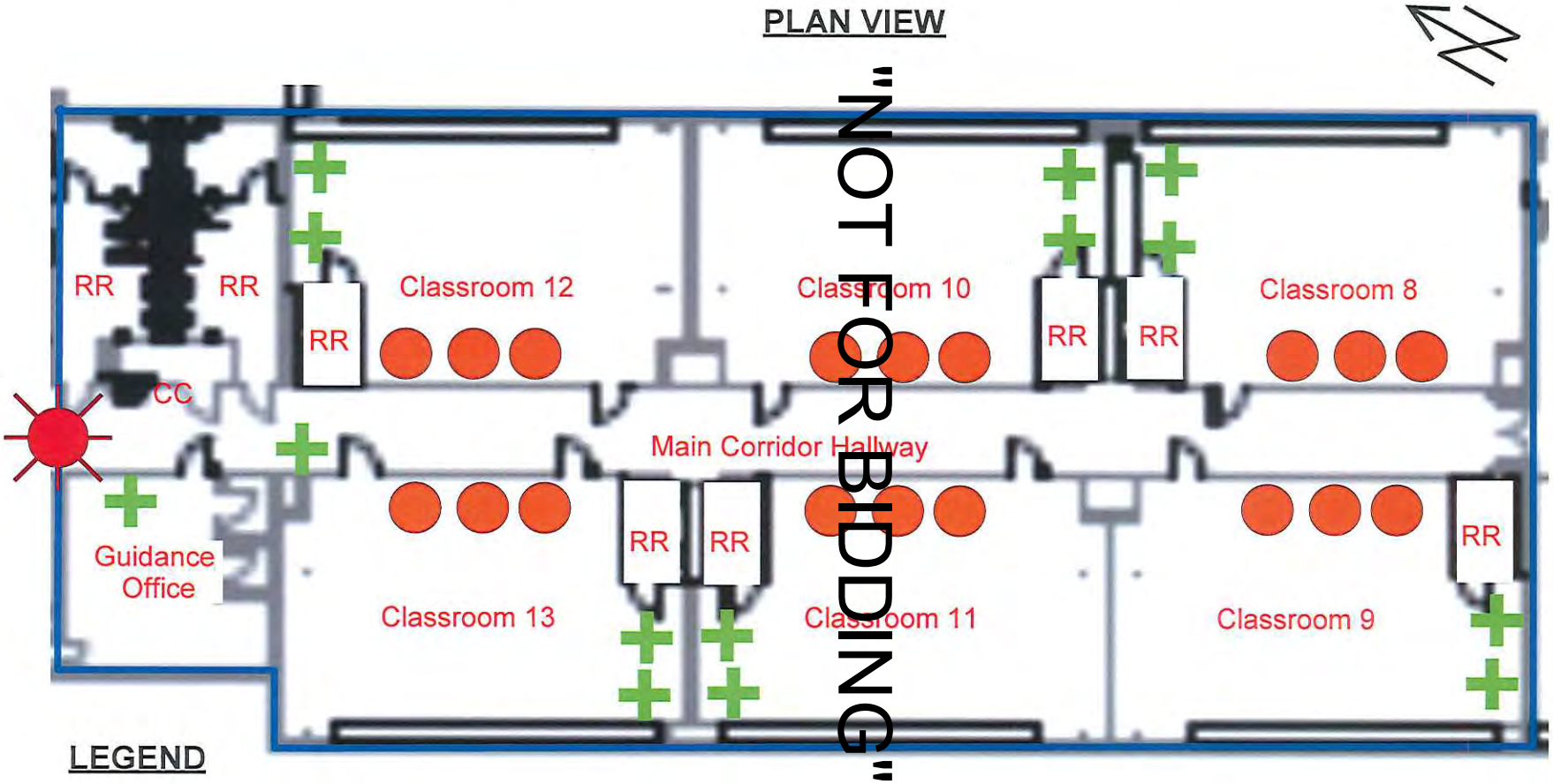
DRAWING 4
(Blackboard/Wallboard Glue Dots)
September 26, 2018

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS ABATEMENT - SITE LOCATION MAP

PLAN VIEW



"NOT FOR BIDDING"

LEGEND

= Extent of Work Area.

= Remove Glue Dots Behind Blackboards (18 Locations Total)

= Remove Glue Dots Behind Wallboards (14 Locations Total)

= Location of Wood Barrier.

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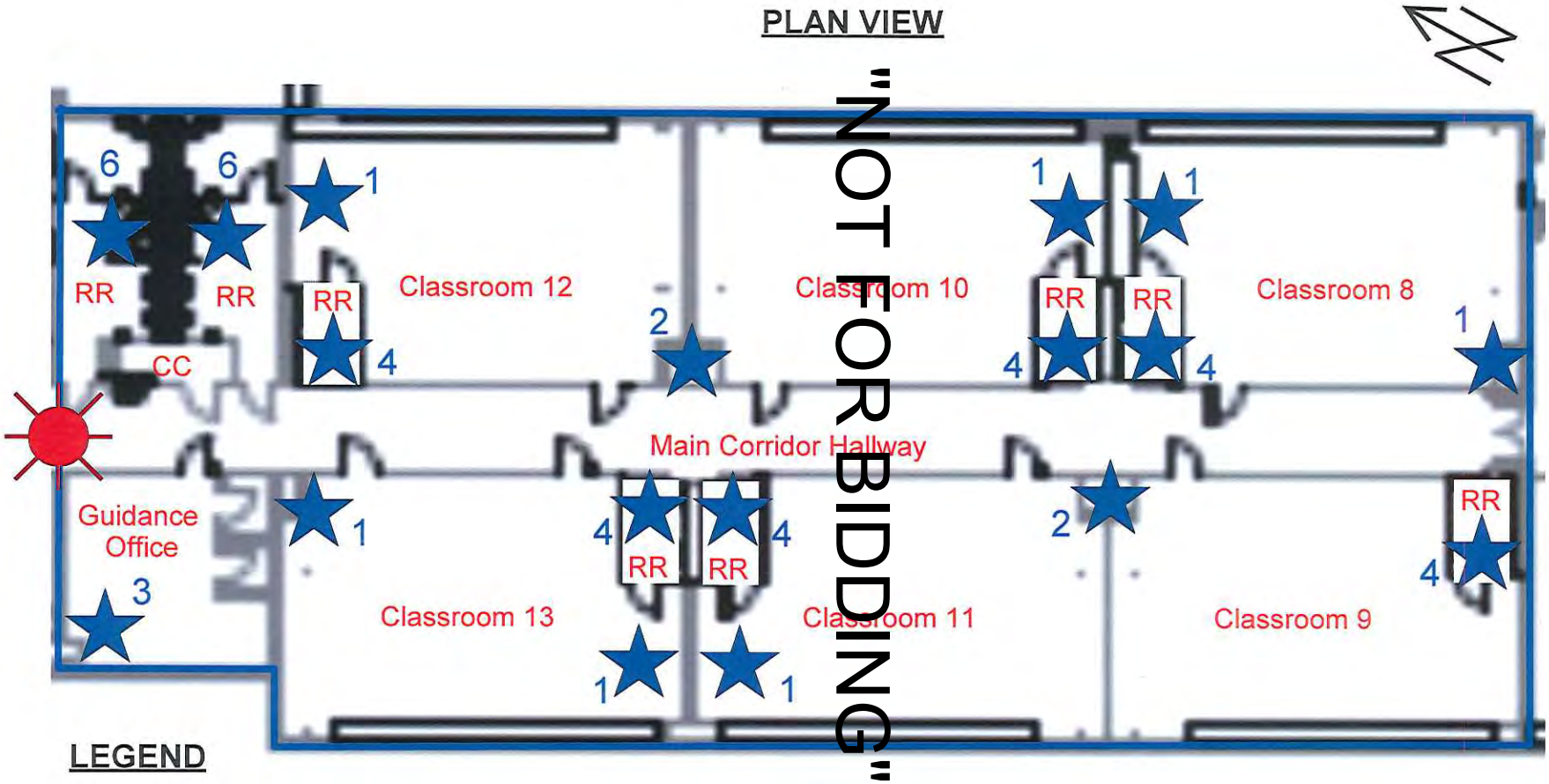
DRAWING 5
(Break-in-Points)

September 26, 2018

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS ABATEMENT - SITE LOCATION MAP

PLAN VIEW



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LEGEND

= Extent of Work Area.

= Block Wall Break-In-Points (50 Locations Total)
Please refer to section 01013 for break-in details.

= Location of Wood Barrier.

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NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS-CONTAINING MATERIALS
Project: EECI-092618

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Photograph #1: Typical view of classroom with asbestos floor tiles.

Photograph #2: Typical view of restrooms located inside main corridor classrooms.

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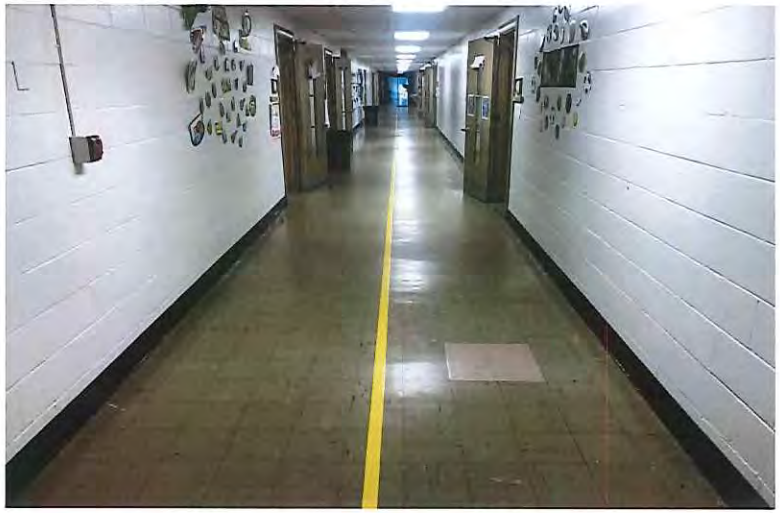
Photograph #3: Typical view of classroom with asbestos floor tiles.



Photograph #4: View of main corridor hallway with asbestos floor tiles.

NORTH LAUREL ELEMENTARY SCHOOL
600 WILSON STREET, LAUREL, DELAWARE 19956
ASBESTOS-CONTAINING MATERIALS
Project: EECI-092618

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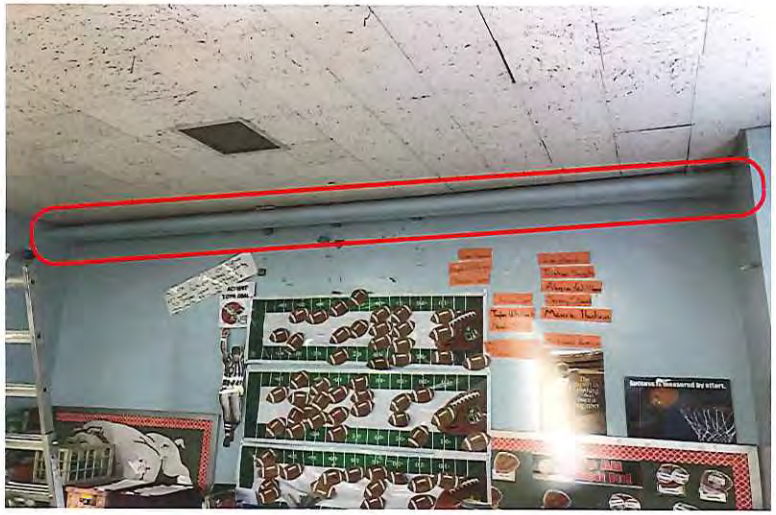

Photograph #5: View of asbestos pipe insulation located in the classrooms.

Photograph #6: Typical view of blackboards located in classroom.

Photograph #7: View water fountain (i.e., break-in-point) located in classrooms.

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SECTION 01028 - APPLICATIONS FOR PAYMENT - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. **This Section specifies** administrative and procedural requirements governing the Contractor's Applications for Payment.

1. Coordinate the Schedule of Values and Application for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.

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

1. **Contractor's Construction Schedule:** The Contractor's Construction Schedule is specified in Division 1 Section "Coordination - Asbestos Abatement."

2. **Submittal Schedule:** The Submittal Schedule is specified in Division 1 Section "Submittals."

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1.3 SCHEDULE OF VALUES

A. **Coordination:** Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

   a. Contractor's Construction Schedule.
   b. Application for Payment forms, including Continuation Sheets.
   c. List of subcontractors.
   d. Schedule of allowances.
   e. Schedule of alternates.
   f. List of products.
   g. List of principal suppliers and fabricators.
   h. Schedule of submittals.

2. **Submit the Schedule of Values** to the Designer at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.

3. **Subschedules:** Where Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

B. **Form:** Submit Schedule of Values on the form at the end of this section.

C. **Format and Content:** Submit a Schedule of Values that is based on functional, measurable, observable portions of the Work. Where appropriate breakdown the Work into phases, building areas or floors.

1. **Identification:** Include the followiug Project identification on the Schedule of Values:

   a. Project name and location.
   b. Name of the Designer.
   c. Project number.
   d. Contractor's name and address.
   e. Date of submittal.

2. **Breakdown Contract Sum** into each of the following items:

   a. Mobilization
   b. Preparation of Work Area
   c. Site Demolition
   d. Asbestos Abatement
   e. Project Decontamination
   f. Other Work
   g. Project Closeout

3. **Arrange the Schedule of Values** in tabular form with separate columns to indicate the following for each item listed:

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   a. Related Specification Sections or Divisions
   b. Description of Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.

      1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Where appropriate, break principal subcontract amounts down into several line items.

5. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

6. Provide a separate line item in the Schedule of Values for each part of the Work involving installation of new materials, assemblies or systems where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.

7. For portions of the Work involving installation of new materials, assemblies or systems, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. **Unit-Cost Allowances:** Show the line-item value of unit-cost allowances, as a product of the unit cost, multiplied by the measnred quantity. Estimate quantities from the best indication in the Contract Documents.

9. **Margins of Cost:** Show line items for indirect costs and margins on actual costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

10. **Schedule Updating:** Update and resubmit the Schedule of Values prior to the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. **Each Application for Payment** shall be consistent with previous applications and payments as certified by the Designer and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. **Payment-Application Times:** Each progress-payment date is indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

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C. **Payment-Application Times:** The date for each progress payment is the 15th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends 15 days prior to the date for each progress payment.

D. **Payment-Application Forms:** Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment.

E. **Payment-Application Forms:** Use forms provided by the Owner for Applications for Payment. Sample copies are included at the end of this Section.

F. **Application Preparation:** Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Designer will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use npdated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

G. **Transmittal:** Submit 3 signed and notarized original copies of each Application for Payment to the Designer by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Designer.

H. **Waivers of Mechanics Lien:** With each Application for Payment, submit partial waivers of mechanics lien from every entity who is lawfully entitled to file a mechanics lien arising out of the Contract and related to the Work covered by the payment.

I. **Waivers of Mechanics Lien:** With each Application for Payment, submit partial waivers of mechanics liens from subcontractors, sub-snbcontractors and suppliers for the construction period covered by the previous application.

1. Submit partial waivers from each subcontractor, sub-subcontractor or supplier on each item provided by such an entity, for the amount requested, prior to deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full waivers from the subcontractors, sub-subcontractors and suppliers providing that item.

3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.

J. **Waiver Delays:** Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

1. Submit final Applications for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

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K. **Waiver Forms:** Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.

L. **Initial Application for Payment:** Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:

1. Submittals designated as required "Before Start of Work" by individual specification sections.
2. List of subcontractors.
3. List of principal suppliers and fabricators.
4. Schedule of Values.
5. Contractor's Construction Schedule (preliminary if not final).
6. Schedule of principal products.
7. Schedule of unit prices.
8. Submittal Schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from governing authorities for performance of the Work.
13. Initial progress report.
14. Report of preconstruction meeting.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire the Owner's insurance.
18. Initial settlement survey and damage report, if required.

M. **Application for Payment at Substantial Completion:** Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

2. Administrative actions and submittals that shall precede or coincide with this application include:

   a. Occupancy permits and similar approvals.
   b. Warranties (guarantees) and maintenance agreements.
   c. Test/adjust/balance records.
   d. Maintenance instructions.
   e. Meter readings.
   f. Startup performance reports.
   g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
   h. Final cleaning.
   i. Application for reduction of retainage and consent of surety.
   j. Advice on shifting insurance coverages.
   k. Final progress photographs.
   l. List of incomplete Work, recognized as exceptions to Designer's Certificate of Substantial Completion.

N. **Final Payment Application:** Administrative actions and submittals that must precede or coincide with submittal of the Final Application for Payment include the following:

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1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Ensure that unsettled claims will be settled.
4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations were paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish, and similar elements.
10. Change of door locks to Owner's access.
11. Disposal receipts, bills of lading and other required documentation of transportation and disposal of asbestos-containing waste.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01028

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SECTION 01043 - COORDINATION - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. General project coordination procedures.
2. Conservation.
3. Contingency Plan.
4. Project Directory.
5. Notifications.
6. Pre-Construction Inspection.
7. Contractor's Construction Schedule.
8. Administrative and supervisory personnel.
9. Pre-Construction Conference
10. Progress Meetings
11. Coordination meetings.
12. Record Keeping.
13. Special Reports.

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

1. "Section 01301 - Submittals - Asbestos Abatement" for administrative procedures regarding submittals.
2. "Section 01601 - Materials and Equipment - Asbestos Abatement" for coordinating general installation.
3. "Section 01701 - Project Closeout - Asbestos Abatement" for coordinating contract closeout.

1.3 COORDINATION

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

B. **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.

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

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.

C. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

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

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

E. **Conservation:** Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

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1.4 CONTINGENCY PLAN:

A. **Contingency Plan:** Prepare a contingency plan for emergencies or any other event that may require breaching of work area containment or modification or abridgement of decontamination or work area isolation procedures. Include in this plan procedures for performing electrical and mechanical repairs inside containment after abatement work has begun. 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. Items to be addressed in the plan include, but are not limited to the following:

1. Fire
2. Accident
3. Life threatening injury
4. Non life threatening injury
5. Rescue
6. Power Failure
7. Pressure differential system failure
8. Breach of containment
9. Electrical faults or shock
10. Excessive heat / cold (if/when such limits are specified)
11. Supplied air system failure
12. Water leaks

13. Waste spills
14. Unauthorized entry into work area
15. Elevated air samples outside of containment
16. Repairs inside containment
17. Toxic releases

1.5 PROJECT DIRECTORY

A. **Develop a directory** of all entities involved in the project. 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, pager and fax 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.

B. **Post:** Post copies of the Project Directory in the project meeting room, the temporary field office, each temporary telephone, and at entrance to clean room of Personnel Decontamination Unit

1.6 NOTIFICATIONS

A. **Notify other entities** at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials (ACM), requirements relative to asbestos set forth in these specifications and applicable regulations. Advance notification will be made to:

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1. Owners of the building/facility;
2. Employees who will perform asbestos abatement work or related activities, or who will be in the work area during the course of the work of this contract.
3. Employers of employees who work and/or will be working in adjacent areas during the course of the work of this contract.
4. State of Delaware; DNREC 10-Day Notification of Demolition or Renovation

B. **Notify emergency service agencies** including fire, ambulance, police or other agency that may service the abatemeut work site in case of an emergency. Notification is to include methods of

entering work area, emergency entry and exit locations, modifications to fire notification or firefighting equipment, and other information needed by agencies providing emergency services.

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

1.7 PRE-CONSTRUCTION INSPECTION:

A. **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 as necessary to document conditions. Submit to Designer for record purposes prior to starting work.

1.8 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. **Bar-Chart Schedule:** Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 30 days after the date established for "Commencement of the Work."

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."
2. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
6. Indicate Clearance of each Work Area in advance of the dates established for Clearance. Allow time for testing and other Designer's procedures necessary for certification of Clearance.
7. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Designer's procedures necessary for certification of Substantial Completion.

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B. **Phasing:** On the schedule, show how requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner affect the sequence of Work.

C. **Work Stages:** Indicate important stages of construction for each major portion of the Work, including submittal review, testing, and installation.

1. Non-asbestos demolitions.
2. Preparation of the Work Area.
3. Asbestos removal.
4. Clearance testing.
5. Substantial Completion.

D. **Area Separations:** Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. **Cost Correlation:** At the head of the schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of Work performed as of the dates used for preparation of payment requests.

1. Refer to Division 1 Section "Applications for Payment" for cost reporting and payment procedures.

F. **Distribution:** Following response to the initial submittal, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

G. **Schedule Updating:** Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concnrrently with the report of each meeting.

1.9 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. Project Supervisor: Provide a full-time Project Supervisor at the work site who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, project scheduling, management, etc. This person is the Contractor`s Representative, and will function as the 'competent person' at the work site responsible for compliance with all applicable federal, state and local regulations, particularly those relating to ACM.

1. Training: The General Superintendent must have a current certification from a state approved trainer for a course that meets the requirements of the EPA Model Accreditation Plan for asbestos abatement contractor/supervisor (40 CFR part 763, Subpart E, Appendix C).

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2. Experience: The General Superintendent must have demonstrable experience in the successful management of asbestos abatement projects that are similar to the work of this contract.
   a. The General Superintendent must have a minimum of two (2) years experience in the on-site management of asbestos abatement projects.
   b. The General Superintendent must have had responsible charge of a minimum of ten (10) asbestos abatement projects similar in size and type to the work of this contract.
3. Competent Person: The General Superintendent is to be a Competent Person as required by OSHA in 29 CFR 1926.

B. Supervisors / Forepersons: Provide full-time Supervisors / Forepersons who are experienced in the supervision of asbestos abatement work areas including work practices, building and personnel, disposal practices, etc. These persons are contractor employees directly responsible to the General Superintendent.

C. Accreditation: The General Superintendent, Supervisors and Forepersons are to be accredited as an Asbestos Abatement Supervisor in accordance with the AHERA regulation 40 CFR Part 763, Subpart E, Appendix C.

1.10 PRE-CONSTRUCTION CONFERENCE:

A. **An initial progress meeting**, recognized as "Pre-Construction Conference" will be convened by the Designer prior to start of any work. The preconstruction conference will be scheduled before start of construction, at a time convenient to the Owner and the Designer, 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.

B. **Attendees:** Authorized representatives of the Owner, Designer, and their consultants will be in attendance. An authorized representative of the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

1. 72 hours advance notice will be provided to all participants prior to convening Pre-Construction Conference.

C. **Agenda:** This is an organizational meeting, to review responsibilities and personnel assignments, to locate regulated areas and temporary facilities including power, light, water, etc. Items of significance that could affect progress will be discussed, including the following:

1. Tentative construction schedule.
2. Critical work sequencing.
3. Designation of responsible personnel.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data, and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Parking availability.
11. Office, work, and storage areas.
12. Equipment deliveries and priorities.
13. Safety procedures.
14. First aid.
15. Security.
16. Housekeeping.
17. Working hours.

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1.11 PROGRESS MEETINGS:

A. **General:** In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Designer will hold general progress meetings as required. These meeting will be scheduled, where possible, at time of preparation of payment request.

B. **Attendees:** Representatives of the Owner and Designer will attend this 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. Require each entity then involved in planning, coordination or performance of work to be properly represented at each meeting.

C. **Agenda:** Be prepared to discuss the following items at the progress meetings. Review other items of significance that could affect progress.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction

Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:

   a. Interface requirements.
   b. Time.
   c. Sequences.
   d. Status of submittals.
   e. Deliveries.
   f. Access.
   g. Site utilization.
   h. Temporary facilities and services.
   i. Hours of work.
   j. Hazards and risks.
   k. Housekeeping.
   l. Quality and work standards.
   m. Change Orders.
   n. Documentation of information for payment requests.

D. **Reporting:** Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule no later than 3 days after each meeting. Include a brief summary, in narrative form, of progress since the previous meeting and report.

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1.12 COORDINATION MEETINGS

A. **Attend project coordination meetings** that will conducted by the Designer at regular intervals convenient for all parties involved. Project coordination meetings are intended to coordinate the work of all contractors performing work on the site, and are in addition to specific meetings held for other purposes, such as regular progress meetings.

1.13 RECORD KEEPING:

A. **Daily Log:** Maintain a Daily Log (in an area accessible to the Owner, Designer and Project Administrator) as a bound, sequential, hand-written record carefully prepared daily that documents but is not limited to the following items:

1. Meetings; purpose, attendees, brief discussion
2. Special or unusual events, i.e. barrier breeching, equipment failures, accidents
3. Documentation of Contractor's completion of the following:
   a. Inspection of work area preparation prior to start of removal and daily thereafter.
   b. Removal of any sheet plastic barriers
   c. Contractor's inspections prior to spray back, lock back, encapsulation, enclosure or any other operation that will conceal the condition of ACM or the substrate from which such materials have been removed.
   d. Removal of waste materials from work area
   e. Decontamination of equipment (list items)
   f. Contractors final inspection/final air test analysis.

B. **Entry/Exit Log:** Maintain within the Decontamination Unit a daily log documenting the dates and time of but not limited to, the following items:

1. Visitations; authorized and unauthorized with the following information
   a. Name
   b. Organization
   c. Entry time
   d. Exit Time
   e. Respiratory protection

2. Personnel, by name, entering and leaving the work area with the following information
   a. Printed Name
   b. Identification Number
   c. Entry Time
   d. Exit Time
   e. Respiratory Protection

C. **Air Monitoring Resnlts:** Post personnel and area air monitoring results in Decontamination Unit within 24 hours of sample collection. Post the respiratory protection requirements for the work in progress.

D. **Records in Decontamination Unit:** Maintain the following documentation in the Decontamination Unit, in a location accessible to workers.

1. Documentation of inspections by OSHA, EPA or local authority
2. Respiratory Protection Program.

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E. **Other records:** Maintain other documentation in a location that is accessible to the Owner, Designer, and Project Administrator including:

1. Waste Manifests and shipping records
2. Landfill receipts.
3. Accident reports.

1.14 SPECIAL REPORTS:

A. **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.

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

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

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

1.15 SUBMITTALS

A. **Before the Start of Work:** Submit the following to the Designer in the same manner as product data. Do not begin work until these submittals are returned with designer's action stamp indicating that all submittals have been "received-not reviewed".

1. Plan of Action.
2. Project Directory.
3. Notifications: copy of notification sent to other entities at the work site, and to emergency service agencies.
4. Pre-Construction Inspection: Report on inspection carried out as required by this section. Include copies of all photographs, video tapes, etc.
5. Contractor's Construction Schedule.
6. Accreditation: Submit evidence in the form of training course certificates for the General Superintendent, Supervisors, and Forepersons as asbestos abatement supervisors in accordance with AHERA requirements. Submit evidence in the form of training course certificates that each worker is trained as an asbestos abatement worker in accordance with AHERA requirements.
7. Resume: Submit resume of General Superintendent

B. **Submit daily:** Provide two (2) copies for information purposes of all documents indicated in the following subsections to Project Administrator by end of the next working day after the day they are received by Contractor.

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1. Section on Record Keeping.
2. Section on Special Reports.

C. **Project Close-out:** Submit two (2) copies for information purposes of all documents indicated in the following sections at final closeout of project as a project close-out submittal.

1. Section on Record Keeping.
2. Section on Special Reports.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION - 01043

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01046 - CUTTING AND PATCHING - ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. Procedures for building small containment areas are specified in Section 01529 Mini Enclosures and Glovebags

B. Procedures for sealing exposed edges are specified in Section 09805 Encapsulation of Asbestos- Containing Materials

C. Procedures for disposal of waste are specified in Section 02084 Disposal of Regulated Asbestos Containing Materials

1.3 SUBMITTALS

A. **Before the Start of Work:** Submit Product Data Sheets for the following to the Designer for review. Begin no work until these submittals are returned with Designer's action stamp indicating that the submittal is "Received-Not Reviewed.":

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1. Tools: equipped with HEPA vacunm dust collection attachments

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Provide local exhaust ventilation systems that comply with ANSI Z9.2

2.2 PRODUCTS

A. Products for encapsulation are specified in Section 09805.

PART 3 - EXECUTION

3.1 WORK PRACTICES

A. Before beginning work of this section, comply with:

1. Section 01527 - Regulated Areas
2. Section 01561 - Worker Protection - Repair & Maintenance
3. Section 01562 - Respiratory Protection

B. Perform cutting, drilling, abrading, or otherwise penetrating any asbestos-containing material in a manner that will minimize the dispersal of asbestos fibers into the air.

C. Provide adequate local exhaust to capture fibers produced by cutting, drilling, or abrading by means of an approved High Efficiency Particulate Absolute (HEPA) filter vacuum. Use specialized equipment such as drills or saws having integral ventilation hoods which are connected to a HEPA vacuum with a flexible hose. Handle and dispose of HEPA filters as contaminated material in accordance with requirements of Section 02084 "Disposal of Regulated Asbestos-Containing Material."

D. Thoroughly saturate absorbent surfaces of asbestos-containing material to be penetrated with a penetrating type encapsulant. Allow encapsulant to penetrate to substrate before working on materials.

E. Seal edges of asbestos-containing material exposed by cutting, drilling, or abrading, etc. with two (2) coats of an approved penetrating encapsulant applied in accordance with manufacturers' printed instruction for use of the encapsulant as an asbestos coating and requirements of Section 09805.

END OF SECTION - 01046

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SECTION 01097 - REFERENCE STANDARDS AND DEFINITIONS - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

9. "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

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

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11. "Designer": This is the entity described as the "Architect" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." All references to Architect or Engineer in the Contract Documents in all cases refer to the Designer. The Designer will represent the Owner during construction and until final payment is due. The Designer will advise and consult with the Owner. The Owner's instructions to the Contractor will be forwarded through the Designer.

12. "Project Administrator": This is the entity described as the "Project Representative" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." The Project Administrator is a full time representative of the Owner at the job site with authority to stop the work upon written or verbal order if requirements of the Contract Documents are not met, or if in the sole judgement of the Project Administrator, Designer, or Owner, the interests of the Owner, safety of any person or the Owner's property are jeopardized by the work.

13. "Stop Work Order": is a written order to cease asbestos removal, encapsulation or enclosure activities. The Contractor must maintain work area enclosure, pressure differential isolation and ventilation of the work area, and decontamination units during the period that a Stop Work Order is in affect.

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

B. Definitions Relative to Asbestos Abatement:

1. "Adequately Wet" means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from the asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.

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

3. "Asbestos-Containing Material (ACM)": Any material containing more than 1% asbestos as determined using the methods specified in appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

4. "Asbestos-Containing Waste Material": any waste that contains asbestos. This term includes filters or other materials contaminated with asbestos. This term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

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5. "Asbestos debris": pieces of ACM that can be identified by color, texture, or composition, or dust, if the dust is determined by an accredited inspector to be ACM.

6. "Certified Industrial Hygienist (C.I.H.)": one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

7. "Competent person" : an individual who meets the requirements of OSHA as a "competent person" for the specific activity involved in the work. The "competent person" must meet the requirements of 29 CFR 1926.32(f), and 29 CFR 1926.1101.

8. "Filter": A media component used to remove solid or liquid particles from air and water.

9. "Friable Asbestos": any asbestos-containing material that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

10. "Grinding" : to reduce to powder or small fragments and includes manual or mechanical chipping or drilling.

11. "HEPA Filter": A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of all mono-dispersed particles of 0.3 microns in diameter.

12. "HEPA Filter Vacuum Collection Equipment (or vacuum cleaner)": High efficiency particulate air filtered vacuum collection equipment with a HEPA filter.

13. "Intact" : that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

14. "Leak-tight" : that solids or liquids cannot escape or spill out. It also means dust-tight.

15. "Negative Pressure Enclosure (NPE) ": A pressure differential and ventilation system where the work area is maintained at a negative pressure relative to air pressure outside the work area.

16. "Nonfriable Material" : any material that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure and has not been rendered friable.

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

18. "Surfacing material" : material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

19. "Thermal system insulation (TSI)" : insulation applied to pipes, fittings, boilers, breeching, tanks, ducts or other components to prevent heat loss or gain.

20. "Time Weighted Average (TWA)": The average concentration of a contaminant in air during a specific time period as determined by the method prescribed in Appendix A of 29 CFR part 1926.1101.

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21. "Visible Emissions": Any emissions containing particulate material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

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

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

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

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

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

2. **Streamlined Language:** The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be

performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

1.4 INDUSTRY STANDARDS

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

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

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

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

"NOT FOR BIDDING"

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

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

E. **Standards:** which apply to asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

1. American National Standards Institute
   a. Fundamentals Governing the Design and Operation of Local Exhaust Systems Publication Z9.2
   b. Practices for Respiratory Protection Publication Z88.2

2. American Society for Testing and Materials

   a. Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849
   b. ASTM Standard Practice for Encapsulants for Spray-or-Trowel-Applied Friable Asbestos-Containing Building Materials E1494
   c. ASTM Standard Practice for Visual Inspection of Asbestos Abatement Projects E1368

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

G. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in the Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

1.	ACI	American Concrete Institute
2.	ACIL	American Council of Independent
3.	ACPA	American Concrete Pipe
4.	ACGIH	American Conference of Governmental Industrial
5.	AIA	The American Institute of
6.	AIHA	American Industrial Hygiene
7.	ANSI	American National Standards
8.	ASHRAE	American Society of Heating, refrigerating and Air-Conditioning Engineers
9.	ASME	American Society of Mechanical Engineers
10.	ASPE	American Society of Plumbing
11.	ASTM	American Society for Testing and
12.	CGA	Compressed Gas Assoc.
13.	FM	Factory Mutual Systems
14.	GA	Gypsum
15.	IEEE	Institute of Electrical and Electronic Engineers
16.	IETA	International Electrical Testing Assoc.
17.	IRI	Industrial Risk Insurers
18.	ISA	Instrument Society of America
19.	ISO	International Standards Organization
20.	NEC	National Electrical Code (from NFPA)
21.	NECA	National Electrical Contractors
22.	NEMA	National Electrical Manufacturers
23.	NFPA	National Fire Protection
24.	NRCA	National Roofing Contractors Assoc.
25.	RFCI	Resilient Floor Covering
26.	UL	Underwriters Laboratories
27.	WLA	White Lung Association

"NOT FOR BIDDING"

H. **Federal Government Agencies:** Names and titles of federal government standard- or Specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard- or Specification-producing agencies of the federal government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

1.	CE	Corps of Engineers
2.	CFR	Code of Federal Regulations
3.	CPSC	Consumer Product Safety
4.	CS	Commercial Standard
5.	DOC	Department of Commerce
6.	DOT	Department of Transportation
7.	EPA	Environmental Protection
8.	FS	Federal Specification
9.	GSA	General Services Administration
10.	MIL	Military Standardization Documents
11.	NIST	National Institute of Standards and Technology
12.	OSHA	Occupational Safety and Health Administration
13.	PS	Product Standard of NBS
14.	USPS	U.S. Postal Service

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

1. Discuss new developments at project meetings at the earliest feasible dates. Record relevant information and actions agreed upon.

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2. Assign and subcontract construction activities, and employ tradesmen and laborers in a manner that will not unduly risk jurisdictional disputes that could result in conflicts, delays, claims and losses.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01097

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SECTION 01098 - CODES, REGULATIONS AND STANDARDS - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

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

1. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations and standards.
2. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

1.3 CODES, REGULATIONS AND STANDARDS

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

NOT FOR BIDDING

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

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

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

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

b. Respiratory Protection
Title 29, Part 1910, Section 134 of the Code of Federal Regulations Title 29, Part 1926, Section 103 of the Code of Federal Regulations

c. Personal Protective Equipment for General Industry
Title 29, Part 1910, Section 132 of the Code of Federal Regulations
Title 29, Part 1926, Sections 95 - 107 of the Code of Federal Regulations

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

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

f. Specifications for Accident Prevention Signs and Tags
Title 29, Part 1910, Section 145 of the Code of Federal Regulations

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

h. Construction Industry
Title 29, Part 1910, Section 1001 of the Code of Federal Regulations Title 29, Part 1926, Section 1101 of the Code of Federal Regulations

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i. Construction Industry - General Duty Standards
Title 29, Part 1926, Sections 20 through 35 of the Code of Federal Regulations

j. Shipyard Industry
Title 29 Part 1915 Section 1001 of the Code of Federal Regulations

2. **DOT:** U. S. Department of Transportation, including but not limited to:

a. Hazardous Substances
Title 49, Part 171 and 172 of the Code of Federal Regulations

b. Hazardous Material Regulations
General Awareness and Training Requirements for Handlers, Loaders and Drivers Title 49, Parts 171-180 of the Code of Federal Regulations

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

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

a. Asbestos Abatement Projects; Worker Protection Rule
Title 40 Part 763, Sub-part G of the Code of Federal Regulations

b. Asbestos Hazard Emergency Response Act (AHERA)
Regulation Title 40, Part 763, Sub-part E of the Code of Federal Regulations

c. EPA Model Accreditation Plan - Asbestos Containing Materials Final Rule & Notice
Title 40, Part 763, Sub-part E, Appendix C of the Code of Federal Regulations

d. National Emission Standard for Hazardous Air Pollutants (NESHAP) National Emission Standard for Asbestos
Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

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

E. Local Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

a. Delaware Solid Waste Authority, Asbestos Policy and Procedures.

1.4 NOTICES:

A. U.S. ENVIRONMENTAL PROTECTION AGENCY

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

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

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

3. Notification: Include the following information in the notification sent to the NESHAP contact:

a. Indication whether the notification is the original or revised notification
b. Name, address, and telephone number of owner or operator.
c. Name, address, and telephone number of contractor.
d. Type of Operation (demolition or renovation).
e. Description of the facility or affected part of the facility being demolished or renovated, including the size (square feet [square meters], number of floors),

age, present and prior use of the facility.

f. Estimate of the approximate amount of RACM to be removed from the facility in terms of linear meters [linear feet] of pipe, and surface area in square meters [square feet] of other facility components. Also estimate the approximate amount of Category I and Category II non-friable ACM in the affected part of the facility that will not be removed before demolition.

g. For facilities in which the amount of friable asbestos materials less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) or 1 cubic meter (35 cubic feet) if the length and width could not be measured. On other facility components, explain techniques of estimation.

h. Location and street address (including building number or name and floor or room number, if appropriate), city county, and state, of the facility being demolished or renovated.

i. Scheduled starting and completion dates of asbestos removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition or renovation; planned renovation operations involving individual nonscheduled operations shall only include the beginning and ending dates of the report period as described in paragraph (a)(4)(iii) of 40 CFR 61.145.

j. Scheduled starting and completion dates of demolition or renovation.

k. Nature of planned demolition or renovation and method(s) to be used, including demolition or renovation techniques to be used and description of affected facility components.

l. Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61 Subpart M).

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m. Name and location of the waste disposal site where the asbestos containing waste material will be deposited.

n. A certification that at least one person trained as required by paragraph (c)(8) of 40 CFR 61.145 will supervise the stripping and removal described by this notification.

o. For facilities being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, the name, title, and authority of the State or local governmental representative who has ordered the demolition. A copy of the order shall be attached to the notification.

p. For emergency renovations described in paragraph (a)(4)(iv) of 40 CFR 61.145, the date and hour that the emergency occurred, a description of the sudden, unexpected event, and an explanation of how the event caused an unsafe condition, or would cause equipment damage or an unreasonable financial burden.

q. Description of procedures to be followed in the event that the unexpected RACM is found or Category II non-friable ACM becomes crumbled, pulverized, or reduced to powder.

r. Name, address, and telephone number of the waste transporter.

B. OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

1. Send a copy of evaluation and certification of alternative work procedures to the national office of OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW, Washington, DC 20210 before work which involves the

removal of more than 25 linear or 10 square feet (7.5 linear meters or 3 square meters) of thermal system insulation or surfacing material is begun using an alternative method.

C. **STATE AND LOCAL AGENCIES:**

1. Send written notification as required by state and local regnlations prior to beginning any work on ACM.

1.5 PERMITS:

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

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

1.6 LICENSES:

A. Licenses: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

1.7 POSTING AND FILING OF REGULATIONS

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

1.8 SUBMITTALS:

A. **Before Start of Work:** Submit the following to the Designer for review. No work shall begin until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

1. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:
   a. State and Local Regulations: Submit copies of codes and regulations applicable to the work.
2. Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.
3. Permits: Submit copies of current valid permits required by state and local regulations.
4. Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION - 01098

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01301 - SUBMITTALS - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. Submittal schedule.
2. Daily construction reports.
3. Shop Drawings.
4. Product Data.
5. Samples.
6. Quality Assurance Submittals

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

1. Permits
2. Applications for payment
3. Performance and payment bonds
4. Insurance certificates
5. List of Subcontractors

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C. RELATED SECTIONS

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

a. Division 1 Section "Applications for Payment - Asbestos Abatement" specifies requirements for submittal of the Schedule of Values.

b. Division 1 Section "Coordination" specifies requirements governing submittal and distribution of meeting and conference minutes.

c. Division 1 Section "Project Closeout-Asbestos Abatement" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES

A. **Coordination:** Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
   a. The Designer reserves the right to withhold action ou a submittal requiring coordination with other submittals until all related submittals are received.

B. **Processing:** To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.

1. Allow 2 weeks for initial review. Allow additional time if the Designer must delay processing to permit coordination with subsequent submittals.
2. If an intermediate submittal is necessary, process the same as the initial submittal.
3. Allow 2 weeks for reprocessing each submittal.
4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Designer sufficiently in advance of the Work to permit processing.

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

1. Provide a space approximately 4 by 5 inches (100 by 125 mm) on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Include the following information on the label for processing and recording action taken.

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   a. Project name.
   b. Date.
   c. Name and address of the Designer.
   d. Name and address of the Contractor.
   e. Name and address of the subcontractor.
   f. Name and address of the supplier.
   g. Name of the manufacturer.
   h. Number and title of appropriate Specification Section.
   i. Drawing number and detail references, as appropriate.

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

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

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

E. **Transmittal Form:** Use AIA Document G810.

F. **Transmittal Form:** Use the sample form at the end of this Section for transmittal of submittals.

1.4 SUBMITTAL SCHEDULE

A. **Listing:** At the end of this section is a listing of the principal submittals required for the work. This listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement. The listing is included only for the convenience of users of the Contract Documents.

B. **Submittal Schedule:** After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.

1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.
2. Prepare the schedule in chronological order. Provide the following information:

   a. Scheduled date for the first submittal.
   b. Related Section number.
   c. Submittal category (Shop Drawings, Product Data, or Samples).
   d. Name of the subcontractor.
   e. Description of the part of the Work covered.
   f. Scheduled date for resubmittal.
   g. Scheduled date for the Designer's final release or approval.

C. **Distribution:** Following response to the initial submittal, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

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1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

D. **Schedule Updating:** Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

A. **Submit** newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. **Shop Drawings** include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

C. **Sheet Size:** Except for templates, patterns and similar full-size Drawings, submit Shop

Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 36 by 48 inches (890 by 1220 mm).

D. **Initial Submittal:** Submit one correctable, translucent, reproducible print and one blue- or black- line print for the Designer's review. The Designer will return the reproducible print.

E. **Initial Submittal:** Submit 2 blue- or black-line prints for the Designer's review. The Designer will return one print.

F. **Final Submittal:** Submit 3 blue- or black-line prints; submit 5 prints where required for maintenance manuals. The Designer will retain 2 prints and return the remainder.

G. **Final Submittal:** Submit 3 blue- or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the Designer for distribution. The Designer will retain 2 prints and return the remainder.

1. One of the prints returned shall be marked up and maintained as a "Record Document."
2. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.6 PRODUCT DATA

A. **Collect Product Data into a single submittal.** Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

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1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

   a. Manufacturer's printed recommendations.
   b. Compliance with recognized trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurement.
   f. Notation of coordination requirements.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

B. **Preliminary Snbmittal:** Submit a preliminary single-copy of Product Data where selection of options is required.

C. **Submittals:** Submit 3 copies of each required submittal. The Designer will retain two, and will return the one marked with action taken and corrections or modifications required.
1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

D. **Distribution:** Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
1. Do not proceed with installation until a final submittal is in the installer's possession.

2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.7 SAMPLES

A. **Submit full-size, fully fabricated Samples** cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Designer's sample. Include the following:

   a. Specification Section number and reference.
   b. Generic description of the Sample.
   c. Sample source.
   d. Product name or name of the manufacturer.
   e. Compliance with recognized standards.
   f. Availability and delivery time.

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

   a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.

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3. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

B. **Submittals:** Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 3 sets. The Designer will return one set marked with the action taken.

1. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
2. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
3. Sample sets may be used to obtain final acceptance of the construction associated with each set.

C. **Distribution of Samples:** Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1. Field samples are full-size examples erected on-site to illustrate finishes, coatings, or finish materials and to establish the Project standard.
   a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.8 QUALITY ASSURANCE SUBMITTALS

A. **Submit quality-control submittals,** including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. **Certifications:** Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

1.9 MISCELLANEOUS SUBMITTALS:

A. **Material Safety Data Sheets:** Process material safety data sheets as "product data." These are submitted for information purposes only, they will be returned with the action stamp, "Received - Not Reviewed."

B. **Inspection and Test Reports:** Classify each inspection and test report as being either "shop drawings" or "product data" depending on whether the report is specially prepared for the project, or a standard publication of workmanship control testing at the point of production. Process inspection and test reports accordingly.

C. **Project Photographs:** Furnish 2 prints each of 3 project photographs at monthly intervals. Comply with Designer's direction concerning desired vantage points for shots.

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D. **Records of Actual Work:** Furnish 4 copies of records of actual work, one of which will be returned for inclusion in the record documents as specified in section "Project Closeout".

E. **Standards:** Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a "Product Data" submittal, submit a single copy of standards for the Designer's use. Where workmanship, whether at the project site or elsewhere is governed by a standard, furnish additional copies of the standard to fabricators, installers and others involved in the performance of the work.

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

G. **Record Documents:** Furnish set of original documents as maintained on the project site. Along with original marked-up record drawings provide 2 photographic copies of marked-up drawings, which, at the Contractor's option, may be reduced to not less than half size.

1.10 DESIGNER'S ACTION

A. Except for submittals for the record or information, where action and return is required, the Designer will review each submittal, mark to indicate action taken, and return promptly.
1. Compliance with specified characteristics is the Contractor's responsibility.

B. **Action Stamp:** The Designer will stamp each submittal with a uniform, action stamp. The Designer will mark the stamp appropriately to indicate the action taken, as follows:

1. Final Unrestricted Release: When the Designer marks a submittal "Approved," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
2. Final-But-Restricted Release: When the Designer marks a submittal "Approved as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
3. Returned for Resubmittal: When the Designer marks a submittal "Not Approved, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
   a. Do not use, or allow others to use, submittals marked "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.
4. Received - Not Reviewed: When the Designer marks a submittal "Received - Not Reviewed" this acknowledges that the submittal has been received. This action applies to materials that are to be submitted for information purposes only, and where no review or action by the Designer is required.
5. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Designer will return the submittal marked "Action Not Required."

C. **Unsolicited Submittals:** The Designer will return unsolicited submittals to the sender without action.

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PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01301

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01503 - TEMPORARY FACILITIES - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY

A. **This Section includes requirements** for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. **Temporary utilities include**, but are not limited to, the following:

1. Water service and distribution.
2. Temporary electric power and light.
3. Temporary heat.
4. Ventilation.
5. Telephone service.
6. Sanitary facilities, including drinking water.
7. Storm and sanitary sewer.

C. **Support facilities include**, but are not limited to, the following:

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1. Field offices, laboratories and storage sheds.
2. Temporary enclosures.
3. Hoists and temporary elevator use.

D. **Security and protection facilities include**, but are not limited to, the following:

1. Temporary fire protection.
2. Barricades, warning signs, and lights.

1.3 DESCRIPTION OF REQUIREMENTS:

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

1.4 SUBMITTALS

A. **Before the Start of Work:** Submit the following to the Designer for review. Begin no work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

1. Hot water heater: Submit manufacturers name, model number, size in gallons (liters), heating capacity, power requirements.
2. Decontamination Unit Sub-panel: Submit product data.
3. Ground Fault Circuit Interrupters (GFCI): Submit product data.
4. Lamps and Light Fixtures: Submit product data.

5. Temporary Heating Units: Provide product data.
6. Temporary Cooling Units: Provide product data and installation instructions.
7. Self Contained Toilet Units: Provide product data and name of sub-contractor to be used for servicing self contained toilets. Submit method to used for servicing.
8. Fire Extinguishers: Provide product data. Submit schedule indicating location at job site and compliance with NFPA 10 and NFPA 241.
9. Temporary Utilities: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
10. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility.

1.5 QUALITY ASSURANCE

A. **Regulations:** Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.

B. **Standards:** Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition" and NECA Electrical Design Library "Temporary Electrical Facilities."

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C. **Electrical Service:** Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

D. **Inspections:** Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. **Temporary Utilities:** Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.

B. **Conditions of Use:** Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire- prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. **General:** Provide new materials and equipment. If acceptable to the Designer, the Contractor may use undamaged, previously used materials and equipment in serviceable condition. Provide materials and equipment suitable for use intended.

B. **Lumber and Plywood:**

1. For job-built temporary offices, shops, and sheds within the construction area, provide UL- labeled, fire-treated lumber and plywood for framing, sheathing, and siding.

2. For fences and vision barriers, provide minimum 3/8-inch- (9.5mm) thick exterior plywood.

C. **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.

1. Equip rungs of metal ladders, etc. with an abrasive non-slip surface.

2. Provide a nonskid surface on scaffold surfaces subject to foot traffic.

2.2 WATER SERVICE

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A. **Water:** Provide potable water approved by local health authorities.

B. **Temporary Water Service Connection:** Connections to the Owner's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment. Provide separate hoses and/or/ pumps for shower water and amended water, without the possibility of cross connection.

C. **Water Hoses:** Provide, heavy-duty, abrasion-resistant, flexible hoses in diameters and lengths necessary to adequately serve temporary facilities, and with a pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

1. Provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

D. **Hot Water Heater:** Provide UL rated minimum 40 gallon (150 liters) electric hot water heater to supply hot water for the Decontamination Unit shower. Activate from 30 amp circuit breaker located within the Decontamination Unit subpanel. Provide with relief valve

compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Drip pans shall consist of a 12" X 12" X 6" (30 cm. X 30 cm. X 15 cm) deep pan, made of 19 gauge galvanized steel, with handles. A 3-quart (3 liter) kitchen saucepan may be substituted for this purpose. Drip pan shall be securely fastened to the hot water heater with bailing wire or similar material. Wiring of the hot water heater shall be in compliance with NEMA, NECA, and UL standards.

E. **Hot Water:** may be secured from the building hot water system, provided backflow protection is installed at point of connection as described in this section under Temporary Water Service connection, and if authorized in writing by the Designer.

2.3 ELECTRICAL SERVICE:

A. **General:** Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

B. **Temporary Power:** Provide service to Decontamination Unit subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect connected to the buildings main distribution panel. Subpanel and disconnect shall be sized and eqnipped to accommodate electrical equipment required for completion of the work.

1. Connection to the building's main distribntion panel is to be made by a licensed electrician

C. **Voltage Differences:** Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

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D. **Electrical Outlets:** Provide properly configured NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters (GFCI), reset button, and pilot light for connection of power tools and equipment.

1. Locate GFCI's exterior to Work Area so that circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, OSHA or other authority. Locate in panel exterior to Work Area.

E. **Electrical Power Cords:** Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

F. **Lamps and Light Fixtures:** Provide general service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination as required by the work or this section. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

2.4 TEMPORARY HEAT:

A. **Heating Units:** Provide temporary heating units that have been tested and labeled by UL,

FM or another recognized trade association related to the fuel being consumed. Use steam or hot water radiant heat where available, and where not available use electric resistant fin radiation supplied from a branch circuit with ground fault circuit interrupter.

2.5 TEMPORARY COOLING:

A. **Cooling Units:** Provide temporary cooling units consisting of a fan coil unit inside the work area with a compressor and heat rejection coil outside.

2.6 TEMPORARY STRUCTURES

A. **Temporary Offices:** Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.

B. **Temporary Toilet Units:** Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

2.7 FIRST AID

A. **First Aid Supplies:** Comply with governing regulations and recognized recommendations within the construction industry.

2.8 FIRE EXTINGUISHERS:

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A. **Fire Extinguishers:** Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

B. **Comply with NFPA 10 and NFPA 241** for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. **General:** 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.

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 completed permanent facilities.

C. **Require** that personnel accomplishing this work be licensed as required by local authority for the work performed.

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.

3.2 SCAFFOLDING:

A. **During the erection and/or moving** of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged.

B. **Clean** as necessary debris from non-slip surfaces.

C. **At the completion of abatement work** clean construction aids within the work area, wrap in one layer of 6 mil (0.15 mm) polyethylene sheet and seal before removal from the Work Area.

3.3 TEMPORARY UTILITY INSTALLATION

A. **General:** Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Designer. Neither the Owner nor Designer will accept cost or use charges as a basis of claims for Change Orders.

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B. **Water Service:**

1. Water connection (without charge) to Owner's existing potable water system is limited to one 3/4" (19 mm) pipe-size connection, and a maximum flow of 10 g.p.m. (38 liters / minute) each to hot and cold water supply. Install using vacuum breakers or other backflow preventer as required by local authority. Hot water shall be supplied at a minimum temperature of 100 degrees F (35 degrees C). Supply hot and cold water to the Decontamination Unit in accordance with Section 01563.

   a. Maintain hose connections and outlet valves in leak-proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

2. Sterilization: Sterilize temporary water piping prior to use.

C. **Electrical Service:**

1. Lock out: Lock out all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuits to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from temporary electrical panel described below.

a. Comply with requirements to OSHA 29 CFR 1910.147 the control of hazardous energy lock out/tag out.

b. Lock out power to Work Area by switching off breakers serving power or lighting circuits in work area. Tagout breakers with notation "DANGER circuit being worked on". Lock panel and have all keys under control of authorized person who has locked pane.

c. Lock out power to circuits running through Work Area wherever possible by switching off and locking all breakers serving these circuits. Tag out breakers with notation "DANGER circuit being worked on". Sign and date danger tag. Lock panel and supply keys to authorized person who has applied locks. If circuits cannot be shut down for any reason, label at intervals of 4-feet" (1.25 meter) on center with signs reading, "DANGER live electric circuit. Electrocution hazard." All asbestos abatement work in the vicinity of the live circuit is to be performed dry. All necessary notifications and procedures for dry removal are to be followed.

d. Lock out power to electrical equipment located in the work area, and to any fans or other equipment that is going to be worked on.

2. Temporary Electrical Panel: Provide temporary electrical panel sized and equipped to accommodate electrical equipment and lighting required by the work. Connect temporary panel to existing building electrical system. Protect with circuit breaker or fused disconnect. Locate temporary panel as directed by Owner or Designer. Panel is to be installed by a licensed electrician.

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3. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

4. Circuit Protection: Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel. Do not use outlet type GFCI devices.

5. Temporary Wiring: in the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors. Provide liquid tight enclosures or boxes for wiring devices.

6. Number of Branch Circuits: Provide sufficient branch circuits as required by the work. Branch circuits are to originate at temporary electrical panel. At minimum provide the following:

a. One Circuit for each HEPA filtered fan unit

b. For power tools and task lighting, provide one temporary 4-gang outlet in the following locations. Provide a separate 110-120 Volt, 20 Amp circuit for each 4- gang outlet (4 outlets per circuit).

c. One outlet in the work area for each 2500 square feet (225 square meters) of work area

d. One outlet at each decontamination unit, located in equipment room

7. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use while conducting visual inspection and air sampling during the work as follows:

   a. One in each work area
   b. One at clean side of each Decontamination Unit.
   c. One at each exhaust location for HEPA filtered fan units

8. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use for conducting visual inspection and final air sampling as set forth in Section 01711 Project Decontamination as follows:

   a. Five inside work area
   b. Two outside work area in location designated by Designer

D. Temporary Lighting:

1. Lock out: Lock out existing power to lighting circuits in Work Area as described in section 01526 Temporary Enclosures. Unless specifically noted otherwise existing lighting circuits to the Work Area are not to be used. All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above.

2. Provide the following or equivalent where natural lighting or existing building lighting does not meet the required light level:

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   a. One 200-watt incandescent lamp per 1000 square feet (92.9 square meters) of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature. In corridors and similar traffic areas provide one 100-watt incandescent lamp every 50 feet (15.2 meters). In stair ways and at ladder runs, provide one lamp minimum per story, located to illuminate each landing and flight. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.

   b. Provide lighting in areas where work is being preformed as required to supply a 100 foot candle (1,076 lumens/sq meter) minimum light level.

   c. Provide lighting in any area being subjected to a visual inspection as required to supply a 100 foot candle (1,076 lumens/sq meter) minimum light level.

   d. Provide lighting in the Decontamination Unit as required to supply a 50 foot candle (538 lumens/sq meter) minimum light level.

3. Number of Lighting Circuits: Provide sufficient lighting circuits as required by the work. Lighting circuits are to originate at temporary electrical panel.

4. Circuit Protection: Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel.

E. Temporary Heat:

1. **General:** Provide temporary heat where indicated or needed for performance of the Work.

2. Heating Facilities: Except where the Owner authorizes use of the permanent system, provide vented, self-contained, LP-gas or fuel-oil heaters with individual space thermostatic control.

   a. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.

3. Maintain a minimum temperature of 70 degrees F (21 degrees C). where finished work has been installed.

4. Maintain a minimum temperature of 75 degrees F (24 degrees C).in the shower of the decontamination unit.

5. Maintain a minimum temperature of 65 degrees F (18 degrees C) in the Work Area at all times that work is going on. At all other times and at completion of removal work, but before start of reconstruction work, maintain a minimum temperature of 50 degrees F (10 degrees C).

6. Maintain a minimum temperature of 50 degrees F (10 degrees C) in the Work Area at all times during and after removal work.

F. Temporary Cooling:

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1. Required Cooling: Provide units sufficient to supply 20,000 BTU/hr (5,862 w) of cooling per 8,000 cubic feet (225 cubic meters) of work area.

G. Temporary Utilities

1. Temporary Telephones: Provide temporary telephone service throughout the construction period for personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first-aid station.
2. Separate Telephone Lines: Provide additional telephone lines for the following:

   a. Where an office has more than 2 occupants, install a telephone for each additional occupant or pair of occupants.
   b. Provide a dedicated telephone line for a fax machine in the field office.

   c. Provide a separate line for the Owner's use.

   d. At each telephone, post a list of emergency telephone numbers.

H. Sanitary Facilities:

1. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.

a. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.

2. Toilets: Use of the Owner's existing toilet facilities will be permitted, so long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to the condition prevalent at the time of initial use.

3. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

4. Provide separate facilities for male and female personnel.

5. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

6. Drinking-Water Facilities: Provide containerized, tap-dispenser, bottled-water drinking- water units, including paper supply.

   a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.8 deg C).

7. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

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   a. Filter out excessive amounts of soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
   b. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

3.4 SUPPORT FACILITIES INSTALLATION

A. **Locate field offices**, field laboratories, storage sheds, and other temporary construction and support facilities for easy access.

   1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. **Provide incombustible construction** for offices, shops, and sheds located within the construction area or within 30 feet (9 m) of building lines. Comply with requirements of NFPA 241.

C. **Project Administrator's Field Office:** Provide air conditioned, heated office space near the Work Area for professional person, suitably finished, furnished, equipped, locked, heated, naturally ventilated, lighted and wired with electrical power, not less than 250 sq. ft. (25 sq meters) floor area. Equip office with 1 telephone line and 1 telephone, and not less than 2

duplex convenience power outlets. In addition to 1 desk, 1 four drawer file cabinet and 3 chairs, furnish office with one 36 inches X 96 inches (1 m X 2.5 m) plan table, and one 24 inches X 48 inches (0.62 m X 1.25 m) work table near electrical power outlet. Provide portable office or use a suitable room as designated by Owner and relocate or add equipment as required to meet the above requirements.

D. **Field Laboratory:** Provide air conditioned, heated office space near the Work Area for a laboratory space, suitably finished, furnished, equipped, locked, heated, naturally ventilated, lighted and wired with electrical power, not less than 250 sq. ft. (25 sq meters) floor area. Equip field laboratory with 1 telephone line and 1 telephone, and not less than 2 duplex convenience power outlets. In addition to 1 desk, 1 four drawer file cabinet and 3 chairs, furnish office with one 36 inches X 96 inches (1 m X 2.5 m) plan table, and one 24 inches X 48 inches (0.62 m X
1.25 m) work table near electrical power outlet. Provide portable office or use a suitable room as designated by Owner and relocate or add equipment as required to meet the above requirements.

E. **Field Offices and Laboratory:** Provide insulated, weather tight temporary offices of sufficient size to accommodate required personnel at the Project Site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:

1. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table, plan rack, and a 6-shelf bookcase.

2. Equip with a water cooler and private toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.

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F. **Storage and Fabrication Sheds:** Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site.

G. **Temporary Enclosures:** Provide temporary enclosures for protection of construction, in progress and completed, from exposure, fonl weather, other construction operations, and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.

3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

4. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.

H. **Temporary Lifts and Hoists:** Provide facilities for hoisting materials and employees. Truck

cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.5 FIRE PROTECTION FACILITIES INSTALLATION

A. **Except for use of permanent fire protection** as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Designer.

B. **Temporary Fire Protection**: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires.
4. Prohibit smoking within any building, structure, other enclosures or in hazardous fire- exposure areas.
5. Prohibit smoking in hazardous fire-exposure areas.
6. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

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C. **Permanent Fire Protection**: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

D. **Barricades, Warning Signs, and Lights:** Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

E. **Environmental Protection:** Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. **Supervision:** Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. **Maintenance:** Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve

indicated results and to avoid possibility of damage.

2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. **Termination and Removal:** Unless the Designer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:

   a. Replace air filters and clean inside of ductwork and housings.

   b. Replace significantly worn parts and parts subject to unusual operating conditions.

   c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION 01503

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01513 - TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 RELATED SECTIONS

A. **Heating and cooling requirements** are set forth in Section 01503 Temporary Facilities - Asbestos Abatement.

1.3 MONITORING

A. **Continuously monitor** and record the pressure differential between the Work Area and the building ontside of the Work Area with a monitoring device incorporating a continuous recorder (e.g. strip chart).

1.4 SUBMITTALS

A. **Before Start of Work:** Submit design of pressure differential system to the Designer for review. Do not begin work until submittal is returned with the Designer's action stamp indicating that the submittal is returned for unrestricted use. Include in the submittal at a minimum:

1. Number of HEPA filtered fan units required and the calculations necessary to determine the number of machines
2. Description of projected air flow within Work Area and methods required to provide adequate air flow in all portions of the work area
3. Anticipated pressure differential across Work Area enclosures
4. Description of methods of testing for correct air flow and pressure differentials
5. Manufacturer's product data on the HEPA filtered fan units to be used
6. Location of the machines in the Work Area
7. Method of supplying adequate power to the machines and designation of building electrical panel(s) which will be supplying the power.
8. Description of work practices to insure that airborne fibers travel away from workers
9. Manufacturer's product data on equipment used to monitor pressure differential between inside and outside of Work Area.
10. Manufacturer's product data on auxiliary generator to be used
11. Manufacturer's product data on auxiliary power switch to be used
12. Schematic diagram of power and auxiliary power supply to HEPA filtered fan units

B. **On a weekly basis:** Submit printout from pressure differential monitoring equipment. Mark printout with date and start of time for each day. Use printout paper that indicates elapsed time in intervals no greater than hours. Indicate on each days record times of starting and stopping abatement work, type of work in progress, breaks for lunch or other purposes, periods of stop work, and filter changes. Cut printout into segments by day, attach to 8 ½" by 11" [215 X 280 mm] paper. Label with project name, contractors name and date.

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1.5 QUALITY ASSURANCE:

A. **Monitor pressnre differential** at Personnel and Equipment Decontamination Units with a differential pressure meter equipped with a continuous recorder. Meter shall be equipped with a warning buzzer which will sound if pressure differential drops below 0.02 inch [0.5 mm] of water.

PART 2 - PRODUCTS

2.1 HEPA FILTERED FAN UNITS:

A. **General:** Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Use units that meet the following requirements.

B. **Cabinet:** Constructed of durable materials able to withstand damage from rough handling and transportation. The width of the cabinet should be less than 30 inches [0.76 meters] to fit through standard-size doorways. Provide units whose cabinets are:

1. Factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance
2. Arranged to provide access to and replacement of all air filters from intake end
3. Mounted on casters or wheels

C. **Fans:** Rate capacity of fan according to usable air-moving capacity under actual operating conditions.

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D. **HEPA Filters:** Provide units whose final filters is the HEPA type with the filter media (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.

1. Provide units with a continuous rubber gasket located between the filter and the filter housing to form a tight seal.
2. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um dioctylphthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.
3. Provide filters that are marked with: the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.
4. Pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. Provide units with the following pre-filters:
   a. First-stage pre-filter: low-efficiency type (e.g., for particles 100 um and larger)
   b. Second-stage (or intermediate) filter: medinm efficiency (eg., effective for particles down to 5 um)
   c. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps.

E. **Instrumentation:** Provide units equipped with:

1. Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed

2. A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge affixed near the gauge for reference, or the Magnehelic reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) (Liters / Second (LPS)) air delivery at that point
3. Elapsed time meter to show the total accumulated hours of operation

F. **Safety and Warning Devices:** Provide units with the following safety and warning devices:

1. Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter
2. Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge
3. Warning lights to indicate normal operation (green), too high a pressure drop across the filters (i.e., filter overloading) (yellow), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge) (red)
4. Audible alarm if unit shuts down due to operation of safety systems

G. **Electrical components:** Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit is to be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.

H. **Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

I. **Mannfactnrer:** Subject to compliance with requirements, provide products of the following:

1. **HEPA filtered Fan Units** The following machines are standard 2000 CFM machines used in typical asbestos abatement jobs.

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Aerospace America, Inc. "Aero-Clean
2000" 900 Truman Parkway
P.O. Box 189 Bay City, Michigan
48707 (517) 684-2121

Abatement Technologies "HEPA-AIRE 1990 and HEPA-AIRE
2000" 3305 Breckinridge Blvd. #118
Deluth, GA 30136
(800) 634-9091 or (404) 925-2761

Global Consumer Services, Inc.

4615-1U E. Industrial
St. Sims Valley, CA
93063 (805) 579-0230

M-Tec Corp. Micro-Trap
1300 W. Steel Rd. Alumina
II Unit #2
Morrisville, PA 19067
(215) 295-8208

2. **Large Capacity:** The following are large capacity 5000-6000 CFM machines used on large asbestos abatement jobs.

   Abatement Technologies "HEPA-AIRE 5000" 3305 Breckinridge Blvd. #118 model H5000C
   Deluth, GA 30136
   (800) 634-9091 or (404) 925-2761

3. **Hazardous Locations:** The following are pneumatically powered machines for use in asbestos abatement jobs in hazardous locations where electric motors are prohibited.

   Abatement Technologies "HEPA-AIRE PNEUMATIC" 3305 Breckinridge Blvd. #118 model H2000P
   Deluth, GA 30136
   (800) 634-9091 or (404) 925-2761

2.2 AUXILIARY GENERATOR:

A. **Auxiliary Generator:** Provide a gasoline-powered self-starting generator with a capacity adequate to power a minimum of 50% of the HEPA filtered fan units in operation at any time during the work.

2.3 AUXILIARY POWER SWITCH:

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A. **Auxiliary Power Switch:** Provide a switching relay which will automatically start auxiliary generator and switch over power supplied to HEPA filtered fan units to auxiliary generator.

PART 3 - EXECUTION

3.1 PRESSURE DIFFERENTIAL ISOLATION

A. **Isolate the Work Area** from all adjacent areas or systems of the building with a Pressure Differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the Work Area.

B. **Relative Pressure in Work Area:** Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of:

   1. 0.02 inches (0 .5 mm) of water.

C. **Accomplish the pressure differential by exhausting** a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. The number of units will increase with increased make-up air or leaks into the Work Area. Determine the number of units required for pressure isolation by the following procedure:

   1. Establish required air circulation in the work area, personnel and equipment

decontamination units.

2. Establish isolation by increased pressure in adjacent areas or as part of seals where required.
3. Exhaust a sufficient number of units from the work area to develop the required pressure differential.
4. The required number of units is the number determined above plus one additional unit.
5. Vent HEPA filtered fan units to outside of building unless authorized in writing by Designer.
6. Vent each HEPA filtered fan unit to inlet of second unit. Vent second unit to a controlled area in the building. Insure that controlled area is isolated from balance of building by critical barriers at all times that units are in operation.
7. Mount units to exhaust directly or through disposable ductwork.
8. Use only new ductwork except for sheet metal connections and elbows.
9. Use ductwork and fittings of same diameter or larger than discharge connection on fan unit.
10. Use inflatable, disposable plastic ductwork in lengths not greater than 100 feet (30 meters).
11. Use spiral wire-reinforced flex duct in lengths not greater than 50 feet (15 meters).
12. Arrange exhaust as required to inflate duct to a rigidity sufficient to prevent flapping.
13. If direction of discharge from fan unit is not aligned with duct use sheet metal elbow to change direction. Use six feet (2 meters) of spiral wire reinforced flex duct after direction change.

D. **Isolation of elevators, stair towers, and return air intakes:** Erect seals with an air space at doors to elevators and stair towers. Pressurize this space with HEPA-filtered air so that it is at a pressure greater than either the Work Area elevator shaft or stair tower.

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1. Fabricate seal by first sealing door with duct tape and 6 mil polyethylene. Construct a barrier from ½" (13 mm) gypsum board supported by 3-5/8" (92 mm) x 25 gauge metal studs at 16" (410 mm) on centers. Space face of barrier a minimum of 3" (76 mm) from face of door. Seal barrier with 6 mil (0.15 mm) sheet plastic and duct tape.

2. Fabricate seal by first sealing door with duct tape and 6 mil (0.15 mm) polyethylene. Construct a barrier from ½" (13mm) CDX plywood supported by 2" X 4" (51 mm x 102 mm) wood studs at 16" (410 mm) on centers. Space face of barrier a minimum of 3" (76 mm) from face of door. Seal barrier with 6 mil (0.15 mm) sheet plastic and duct tape.

3. Use plywood and framing lumber that is treated to be fire resistant.

4. Pressurize space with exhaust from HEPA filtered fan unit. Continuously maintain a pressure differential with this space a minimum of 0.02 inches (0.5 mm) of water higher in static pressure than any adjacent space.

5. Locate HEPA filtered fan unit outside of work area. Fabricate a manifold as required to distribute air to individual spaces to be isolated. Provide relief venting at unit as required to prevent shut down due to low air flow while still maintaining required air pressure.

E. **Isolation of chases and enclosed stairs:** Pressurize chases and enclosed stairs with HEPA filtered air so that it is at a pressure greater than any adjacent work area.

1. Pressurize space with exhaust from HEPA filtered fan unit. Continuously maintain a pressure differential with this space a minimum of 0.02 (.5 mm) inches of water higher in static pressure than any adjacent work area.

F. **Isolation of chases and enclosed stairs:** Pressurize chases and enclosed stairs so that they are at a pressure greater than any adjacent work area.

1. Pressurize space with centrifugal-type fans. Axial type fans are not to be used for this purpose. Continuously maintain a pressure differential in this space a minimum of 0.02 inches (0.5 mm) of water higher in static pressure than any adjacent work area.

G. **Isolation of return air ductwork:** Return air duct work which must be kept operating is located in the Work Area. This duct work is to be isolated from the Work Area by an enclosure forming an annular space around the duct which is positively pressurized with HEPA filtered air.

1. Wrap the duct with 6 mil (0.15 mm) polyethylene. Seal all polyethylene seams with spray glue and duct tape.

2. Enclose wrapped duct with two layers of polyethylene. Fabricate inner layer from 6 mil (0.15 mm) polyethylene with all seams sealed with spray glue and duct tape. Arrange outer layer to support inner layer. Fabricate out of reinforced sheet plastic with seams sealed with spray glue and duct tape and reinforced with staples. Support outer layer with a frame work fabricated from 2" x 4"s (51 mm x 102 mm) at 24" (610 mm) on center. Enclosures less than 2'-6' in diameter may be reinforced with box strapping in lieu of wood framing.

3.2 AUXILIARY GENERATOR

A. **Provide auxiliary gasoline-powered generator** located outside of the building in a location protected from the weather. Install the generator in a location so that the exhaust from the generator does not flow to any building ventilation or supplied air intakes. Arrange so that if a power failure occurs the generator automatically starts and supplies power to a minimum of 50% of the HEPA filtered fan units in operation.

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3.3 AIR CIRCULATION IN THE WORK AREA:

A. **Air Circulation:** For purposes of this section air circulation refers to either the introduction of outside air to the Work Area or the circulation and cleaning of air within the Work Area.

B. **Air circulation in the Work Area** is a minimum requirement intended to help maintain airborne fiber counts at a level that does not significantly challenge the work area isolation measures. The Contractor may also use this air circulation as part of the engineering controls in the worker protection program.

C. **Determining the Air circulation Requirements:** The air flow volume (cubic meters per minute) exhausted (removed) from the workplace must exceed the amount of makeup air supplied to the enclosure. Provide a fully operational air circulation system supplying a minimum of the following air circulation rate:

1. 4 air changes per hour

D. Determine Number of Units needed to achieve required air circulation according to the following procedure:

1. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling

height. Determine total air circulation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by 60 and multiplying by the air change rate.

2. Air Circulation Required in Cubic Feet of Air per Minute (CFM) =

$$\frac{\text{Volume of work area (cu. ft.)}}{60 \text{ (minutes per hour)}} \times \text{Number of air changes per hour}$$

5. Divide the air circulation requirement (CFM) ((LPS)) above by capacity of HEPA filtered fan unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute (Liters / second) with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machine's labeled operating characteristics.

6. Number of Units Needed =

$$\frac{\text{Air circulation Requirement (CFM) ((LPS))}}{\text{Capacity of Unit with Loaded Filters (CFM) ((LPS))}}$$

7. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

3.4 EXHAUST SYSTEM:

A. **Pressure differential isolation and air circulation** and pressure differential in the Work Area are to be accomplished by an exhaust system as described below.

1. Exhaust all units from the Work Area to meet air circulation requirement of this section.
2. Location of HEPA Filtered Fan Units: Locate fan 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 HEPA filtered fan unit(s) at a maximum distance from the worker access opening or other makeup air sources.
3. The end of the unit or its exhaust duct should be placed through an opening in the plastic barrier or wall covering. Seal plastic around the unit or duct with tape.
4. Vent to Outside of Building, unless authorized in writing by the Designer.
5. Air Handling Unit Exhaust: The exhaust plume from air handling units should be located away from adjacent personnel and intakes for HVAC systems.
6. Decontamination Units: Arrange Work Area and decontamination units so that the majority of make up air comes through the Decontamination Units. Use only personnel or equipment Decontamination Unit at any time and seal the other so that make up air passes through unit in use.
7. Supplemental Makeup Air Inlets: Provide where required for proper air flow through the Work Area in location approved by the Designer by making openings in the plastic sheeting that allow air from outside the building into the Work Area. Locate auxiliary makeup air inlets as far as possible from the fan unit(s) (e.g., on an opposite wall), off the floor (preferably near the ceiling), and away from barriers that separate the Work Area from occupied clean areas. Cover with flaps to reseal automatically if the pressure differential system should shut down for any reason. Spray flap and around opening with spray adhesive so that if flap closes meeting surfaces are both covered with adhesive. Use adhesive that forms contact bond when dry.

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3.5 RECIRCULATION SYSTEM:

A. Pressure differential isolation and air circulation in the Work Area are to be accomplished by a recirculation system as described below.

1. Recirculate air in the Work Area through HEPA filtered fan units to accomplish air circulation requirements of this section.
2. Location of Fan Units: Locate HEPA filtered fan units so that air is circulated through all parts of the Work Area, and so that required pressure is maintained at all parts of Work Area geometry. Move units as necessary, so that in any location where asbestos-containing materials are being disturbed, air movement is directed away from employees , and toward the HEPA filter fan unit. Direct air flow in these locations so that it is predominantly toward workers' backs at the breathing zone elevation.

3.6 AIR CIRCULATION IN DECONTAMINATION UNITS:

A. **Pressure Differential Isolation:** Continuously maintain the pressure differential required for the work area in the:

1. Personnel Decontamination Unit: across the Shower Room with the Equipment Room at a lower pressure than the Clean room.

2. Equipment Decontamination Unit: Across the Holding Room with the Wash Room at a lower pressure than the Clean Room.

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B. **Air Circulation:** Continuously maintain air circulation in Decontamination Units at same level as required for Work Area.

C. **Air Movement:** Arrange air circulation through the Personnel Decontamination Unit so that it produces a movement of air from the Clean Room through the Shower Room into the Equipment Room. At each opening, the air flow velocity must be sufficient to provide visible indications of air movement into the work area.. The velocity of air flow within the enclosure must be adequate to remove airborne contamination from each worker's breathing zone without disturbing the asbestos-containing material on surfaces.

3.7 USE OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM:

A. **General:** Each unit shall be serviced by a dedicated minimum 115V-20A circuit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed under requirements of Section 01503 "Temporary Facilities." Do not use existing branch circuits to power fan units.

B. **Air Flow Tests:** Air flow patterns will be checked before removal operations begin, at least once per operating shift and any time there is a question regarding the integrity of the enclosure. The primary test for air flow is to trace air currents with smoke tubes or other visual methods. Flow checks are made at each opening and at each doorway to demonstrate that air is being drawn into the enclosure and at each worker's position to show that air is being drawn away from the workers location and toward the HEPA filtration unit.

C. **Demonstrate Condition of Equipment** for each HEPA filtered fan unit and pressure differential monitoring equipment including proper operation of the following:

1. Squareness of HEPA Filter
2. Condition of Seals
3. Proper operation of all lights
4. Proper operation of automatic shut down if exhaust is blocked
5. Proper operation of alarms
6. Proper operation of Magnehelic gauge
7. Proper operation and calibration on pressure monitoring equipment

D. **Demonstrate Operation** of the pressure differential system to the Designer will include, but not be limited to, the following:

1. Plastic barriers and sheeting move lightly in toward Work Area,
2. Curtain of decontamination units move lightly in toward Work Area,
3. There is a noticeable movement of air through the Decontamination Unit.
4. Use smoke tube to demonstrate air movement from Clean Room through Shower Room to Equipment Room.
5. Use smoke tubes to demonstrate a definite motion of air across all areas in which work is to be performed.
6. Use a differential pressure meter or manometer to demonstrate the required pressure differential at every barrier separating the Work Area from the balance of the building, equipment, ductwork or outside.
7. Modify the Pressure Differential System as necessary to demonstrate successfully the above.

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E. **Use of System During Abatement Operations:**

1. Start fan units before beginning work (before any asbestos-containing material is disturbed). After abatement work has begun, run units continuously to maintain a constant pressure differential and air circulation 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.
2. Monitoring Pressure Within the Enclosure: After the initial air flow patterns have been checked, the static pressure must be monitored within the enclosure. Monitoring may be made using manometers, pressure gauges, or combinations of these devices. It is recommended that they be attached to alarms and strip chart recorders
3. Do not shut down air pressure differential system during encapsulating procedures, unless authorized by the Designer in writing. Supply sufficient pre-filters to allow frequent changes.
4. Start abatement work at a location farthest from the fan units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and fan units are operating again.
5. Corrective Actions: If the manometers or pressure gauges demonstrate a reduction in pressure differential below the required level, work should cease and the reason for the change investigated and appropriate changes made. The air flow patterns should be retested before work begins again.

6. At completion of abatement work, allow fan units to run as specified under section 01711, to remove airborne fibers that may have been generated during abatement work and cleanup and to 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. Dismantling the System:

1. When a final inspection and the results of final air tests indicate that the area has been decontaminated, fan units may be removed from the Work Area. Before removal from the Work Area, remove and properly dispose of pre-filter, decontaminate exterior of machine and seal intake to the machine with 6 mil (0.15 mm) polyethylene to prevent environmental contamination from the filters.

END OF SECTION - 01513

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SECTION 01526 - TEMPORARY ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUBMITTALS:

A. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. Strippable Coatings: Submit following:
   a. Product description including major components and solvents.
   b. Test report on ASTM E84 test of surface burning characteristics.
   c. Manufacturer's installation instructions. Indicate portions applicable to the project and selected assemblies where the manufacturer offers alternatives.
2. Spray Cement: Submit following:
   a. Product description including major components and solvents.
   b. Manufacturer's installation instructions. Indicate portions applicable to the project.
3. Sheet Plastic: For fire retardant plastic submit test reports on NFPA 701 test.
4. Signs: Submit samples of signs to be used.

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B. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal has been' "Received - Not Reviewed."

1. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:
   a. Strippable Coating.
   b. Spray Cement.

PART 2 - PRODUCTS

2.1 SHEET PLASTIC:

A. **Polyethylene Sheet:** A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil (0.15 mm) thick , clear, frosted, or black as indicated.

B. **Polyethylene Sheet:** Provide 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, 6.0 mil (0.15 mm) thick frosted or black as indicated.

C. **Reinforced Polyethylene Sheet:** Where plastic sheet constitutes the only barrier between the work area and the building exterior, provide translucent, nylon reinforced or woven polyethylene, 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, 6.0 mil (0.15 mm) thick, frosted or black as indicated.

2.2 STRIPPABLE COATINGS:

A. **Strippable Coatings:** Provide strippable coatings in aerosol cans or premixed for spray application formulated to adhere gently to surfaces and remove cleanly by peeling off at the completion of the work.
   1. Provide only water-based latex materials.
   2. Provide materials manufactured for the specific application required.

B. **Wall coating:** designed to be easy to remove.

C. **Floor coating:** designed to provide a tough film which resists spread of water beneath plastic layer.

D. **Window coating:** recommended by the manufacturer for use on windows. Supply materials that are designed to be stable on glass in sunlight and resist the transmission of ultraviolet radiation.

E. **Fire Safety:** Provide materials that meet the following requirements:

   1. When wet or while being installed:
      a. Do not create combustible vapors
      b. Have no flash point
      c. Are not noxious
      d. Department of Transportation category of non-flammable

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   2. When dry, material must have a Class A rating as a building material and meet the following requirements when tested in accordance with ASTM E-84:
      a. Flame Spread no greater than 20
      b. Fuel Contributed 0
      c. Smoke Developed no more than 110

F. **Deliver materials** to the job site in unopened, factory-labeled containers.

G. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

H. **Manufacturer:** Subject to compliance with requirements, provide products of one of the Following:

   1. Isotek Corporation — Spray Poly
      P.O. Box 29799 New Orleans,
      LA 70189-0799 (504)367-9856

   2. H.B. Fuller Co. — Spray Poly
      3900 Jackson St., NE — Part no.
      3256 Minneapolis, MN 55421
      (800) 328-4594

2.3 MISCELLANEOUS MATERIALS:

A. **Duct Tape:** Provide duct tape in 2 inch or 3 inch (50 mm or 75 mm) widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

B. **Spray Cement:** Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

PART 3 - EXECUTION

3.1 SEQUENCE OF WORK:

A. **Carry out work of this section sequentially**. Complete each of the following activities in accordance with requirements before proceeding to the next.
1. Provide emergency exits and emergency lighting.
2. Control access
3. Provide respiratory and worker protection.
4. Provide Critical Barriers.
5. Prepare Area.
6. Provide Primary Barriers.
7. Provide Isolation Areas as required.
8. Provide Secondary Barrier.

3.2 GENERAL:

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A. **Work Area:** the location where asbestos abatement work occurs. The Work Area is a variable of the extent of work of the Contract. It may be a portion of a room, a single room or a complex of rooms. 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 control work.

B. **Completely isolate the Work Area** from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Section 01711. Perform all such required cleaning or decontamination at no additional cost to owner.

C. Construct enclosures to provide an air-tight seal around ducts and openings into existing ventilation systems and around penetrations for electrical conduits, telephone wires, water lines, drain pipes, etc. Construct enclosures to be both airtight and watertight except for those openings designed to provide entry and/or air flow control.

D. **Size:** Construct enclosure with sufficient volume to encompass all of the working surfaces yet allow unencumbered movement by the worker(s), provide unrestricted air flow past the worker(s), and ensure walking surfaces can be kept free of tripping hazards.

E. **Shape:** The enclosure may be any shape that optimizes the flow of ventilation air past the worker(s).

F. **Structural Integrity:** The walls, ceilings and floors must be supported in such a manner that portions of the enclosure will not fall down during normal use.

G. **Barrier Supports:** Provide frames as necessary to support all unsupported spans of sheeting.

H. **Openings:** It is not necessary that the structure be airtight; openings may be designed to direct air flow. Such openings are to be located at a distance from active removal operations. They are to be designed to draw air into the enclosure under all anticipated circumstances. In the event that negative pressure is lost, they are to be fitted with either HEPA filters to trap dust or automatic trap doors that prevent dust from escaping the enclosure. Openings for exits are to be controlled by an airlock or a vestibule.

I. **Place all tools**, scaffolding, staging, etc. necessary for the work in the area to be isolated prior to completion of Work Area isolation.

J. **Areas Within an Enclosure:** Each enclosure consists of a work area, a decontamination area, and waste storage area. The work area where the asbestos removal operations occur are to be separated from both the waste storage area aud the contamination control area by physical curtains, doors, and/or airflow patterns that force any airborne contamination back into the work area.

K. **Removing Mobile Objects:** Clean movable objects and remove them from the work area before an enclosure is constructed unless moving the objects creates a hazard. Mobile objects will be assumed to be asbestos contaminated and are to be either cleaned with amended water and a HEPA vacuum and then removed from the area or wrapped and then disposed of as asbestos-contaminated waste.

L. **Disabling HVAC Systems:** The power to the heating, ventilation, and air conditioning systems that service the regulated area must be deactivated and locked out. All ducts, grills, access ports, windows and vents must be sealed off with two layers of plastic to prevent entrainment of contaminated air.

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M. **Operating HVAC Systems in the regulated Area:** If components of a HVAC system located in the regulated area are connected to a system that will service another zone during the project, the portion of the duct in the regulated area must be sealed and pressurized. Necessary precautions include caulking the duct joints, covering all cracks and openings with two layers of sheeting, and pressurizing the duct throughout the duration of the project by restricting the return air flow. The power to the fan supplying the positive pressure should be locked "on" toprevent pressure loss.

1. If fan providing positive pressure fails for any reason, immediately stop asbestos removal work, mist the area to reduce airborne fiber levels. Notify the Project Administrator. Do not re-start asbestos removal work until authorized by the Designer.

N. **Lockout power to Work Area** by switching off all breakers serving power or lighting circuits in work area. A lock and tag shall be placed on each breaker used to de-energize circuits and equipment with notation "DANGER circuit being worked on". Lock panel and have all keys under control of authorized person who has applied the locks.

O. **Lockout power** to circuits running through work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation "DANGER circuit being worked on". Lock panel and have all keys under control of authorized person who applied locks. If circuits cannot be shut down for any reason, label at intervals 4 feet (1.22 m) on center with signs reading, "DANGER live electric circuit. Electrocution hazard." Label circuits in hidden locations but which may be affected by the work

in a similar manner.

P. **Inspection Windows:** Install inspection windows in locations shown on the plans or as directed by the Designer. Each inspection window is to have a 24 inch X 24 inch (610 X 610 mm) viewing area fabricated from 1/4 inch (6.35 mm) acrylic or polycarbonate sheet. Install window with top at 6 feet-6 inches (1.98 m) above floor height in a manner that provides unobstructed vision from outside to inside of the Work Area. Protect window from damage from scratching, dirt or any coatings used during the work. A sufficient number of windows are to be installed to provide observation of all portions of the Work Area that can be made visible from adjacent areas. Inspection windows that open into uncontrolled area are to be covered with a removable plywood hatch secured by lock and key. Provide keys to Designer for all such locks.

3.3 EMERGENCY EXITS:

A. **Provide emergency exits and emergency lighting** as set forth below:

1. Emergency Exits: At each existing exit door from the Work Area provide the following means for emergency exiting:
2. Arrange exit door so that it is secure from outside the Work area but permits exiting from the Work Area.
3. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1 inch (25.4 mm) wide. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2 inches (50.8 mm) wide.
4. Provide lighted EXIT sign at each exit.
5. Provide battery-operated emergency lighting that switches on automatically in the event of a power failure.

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3.4 CONTROL ACCESS:

A. **Isolate the Work Area** to prevent entry by building occupants into Work Area or surrounding controlled areas. Accomplish isolation by the following:

1. Submit to Designer a list of doors and other openings that must be secured to isolate Work Area. Include on list notation if door or opening is in an indicated exit route.
2. After receiving written authorization from the Designer lock all doors into Work Area, or, if doors cannot be locked, chain shut. Notify the local fire department of the list of doors/or other openings which must be chained or otherwise secured shut. Cover any signs that direct emergency exiting, either outside or inside of Work Area, to locked doors. Do not obstruct doors required for emergency exits from Work Area or from building.
3. After receiving written authorization from the Designer, construct partitions or closures across any opening into Work Area. Partitions are to be a minimum of 8 feet (2.44 meters) high.
4. Fabricate partitions from 3-5/8 inch (9.21 cm) , 25 gage metal studs with ½ inch (1.27 cm) gypsum board on both faces. Brace at intervals of 4 feet (1.22 m) on center.
5. Fabricate partitions from 2 inch X 4 inch (50.8mm X 101.6mm) wood studs with ½ inch (1.27 cm) plywood on both faces. Brace at intervals of 4 feet (1.25 m) on center.
6. Fabricate partitions from 2 inch X 4 inch (50.8 mm X 101.6 mm) wood studs with ½ inch (1.27 cm) plywood on both faces. Brace at intervals of 4 feet (1.22 m) on center. Use only fire retardant treated wood.

7. Fabric-type folding partitions: provide temporary partitions across fabric-type folding doors or partitions into Work Area.

8. Rigid-type folding partitions: remove operating bar and latch on clean side of folding partitions. Fasten down operating lever with hook and chain or other secure device on Work Area side. At completion of all abatement work reinstall bar and latch and adjust for proper operation.

9. Modify elevator controls to prevent elevators from stopping at doors in Work Areas. This work is to be performed by a qualified elevator technician.

10. Replace passage sets on doors required for exiting from Work Area with temporary locksets for duration of the project. Use entry type locksets that are key lockable from one side and always operable from inside. Install locksets with key side in stair tower and escape side on Work Area side. Provide one key to Owner and maintain one key in clean room of decontamination unit. After meeting Contractor release criteria set forth in Section 01711 Project Decontamination, reinstall original passage sets and adjust for proper operation.

B. **Locked Access:** Arrange Work Area so that the only access into Work Area is through lockable doors to personnel and equipment decontamination units.

1. Install temporary doors with entrance type locksets that are key lockable from the outside and always unlocked and operable from the inside. Do not use deadbolts or padlocks.

2. Replace locksets or passage sets on doors leading to decontamination units with temporary locksets for duration of the project. Remove any deadbolts or padlocks. Use entry type locksets that are key lockable from outside and always unlocked and operable from inside. After meeting contractor release criteria set forth in Section 01711 Project Decontamination reinstall original locks, passage sets and locksets and adjust for proper operation.

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3. Provide one key for each door to Owner, and Designer and maintain one key in clean room of decontamination unit (3 total).

C. **Visual Barrier:** Where the Work Area is immediately adjacent to or within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil (0.15 mm) in thickness so that the work procedures are not visible to building occupants. Where this visual barrier would block natural light, substitute frosted or woven rip-stop sheet plastic in locations approved by the Designer.

D. **Demarcation.** Demarcate the regulated area in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne concentrations of asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area.

E. **Access.** Limit access to regulated areas to authorized persons as defined by OSHA, and to the Owner, Designer, Project Administrator or a representative authorized by one of these entities.

F. **Provide Warning Signs** at each locked door leading to Work Area reading as follows:

1. Print text in both English and Spanish

Legend	Notation
KEEP OUT	3 inch (77 mm) Sans Serif Gothic or Block
BEYOND THIS POINT	1 inch (25.4 mm) Sans Serif Gothic or Block
ASBESTOS ABATEMENT WORK	1 inch (25.4 mm) Sans Serif Gothic or Block
IN PROGRESS	1 inch (25.4 mm) Sans Serif Gothic or Block
BREATHING ASBESTOS DUST MAY BE HAZARDOUS TO YOUR HEALTH	14 Point Gothic

2. Provide Warning Signs at each locked door leading to Work Area reading as follows

Legend	Notation
KEEP OUT	3 inch (77 mm) Sans Serif Gothic or Block
CONSTRUCTION	1 inch (25.4 mm) Sans Serif Gothic or Block
WORK AREA	1 inch (25.4 mm) Sans Serif Gothic or Block
PROTECTIVE CLOTHING REQUIRED BEYOND THIS POINT	14 Point Gothic

3. Immediately inside door and outside critical barriers post an approximately 20 inch by 14 inch (508 mm X 356 mm) manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

Legend

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

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4. Provide spacing between respective lines at least equal to the height of the respective upper line.

3.5 ALTERNATE METHODS OF ENCLOSURE:

A. **Alternate methods** of containing the Work Area may be submitted to the Designer for approval in accordance with procedures set forth in Section 01632 Substitutions. Do not proceed with any such method(s) without prior written approval of the Designer.

B. **Notification:** Before work which involves the removal of more than 25 linear or 10 square feet (7.5 linear meters or 3 square meters) of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of required evaluation and certification. Send a copy of such evaluation and certification to the national office of OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW, Washington, DC 20210 and to the Designer.

C. **Use a control method** that encloses, contains or isolates the processes or source of airborne asbestos dust, or otherwise captures or redirects such dust before it enters the breathing zone of employees.

D. **Certification:** Submit a certification from a certified industrial hygienist (CIH) or licensed

professional engineer who is also qualified as a project designer, who has evaluated the work area, the projected work practices and the engineering controls and who certifies in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs and any requirements of Section 01562 "Respiratory Protection"under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria of OSHA 1926.1101, and as determined in accordance with the portion of Section 01013 "Summary of Work - Asbestos Abatement" that describes the Owner's monitoring of the project.

3.6 RESPIRATORY AND WORKER PROTECTION:

A. **Before proceeding** beyond this point in providing Temporary Enclosures:
   1. Provide Worker Protection per Section 01560
   2. Provide Respiratory Protection per Section 01562
   3. Provide Personnel Decontamination Unit per Section 01563

3.7 CRITICAL BARRIERS:

A. **Completely Separate** the Work Area from other portions of the building, and the outside by closing all openings with sheet plastic barriers at least 6 mil (0.15 mm) in thickness, or by sealing cracks leading out of Work Area with duct tape.

B. **Individually seal** all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the Work Area with duct tape alone or with polyethylene sheeting at least 6 mil (0.15 mm) in thickness taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed. Take care in sealing of lighting fixtures to avoid melting or burning of sheeting.

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C. **Provide Sheet Plastic** barriers at least 6 mil (0.15 mm) in thickness as required to seal openings completely from the Work Area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement.

D. **Mechanically Support** sheet plastic independently of duct tape or spray cement seals so that seals do not support the weight of the plastic. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Designer.

   1. Plywood squares 6 inch x 6 inch x 3/8 inch (152 mm x 152 mm x 9.53mm) held in place with one 6d smooth masonry nail or electro-galvanized common nail driven through center of the plywood and duct tape on plastic so that plywood clamps plastic to the wall. Locate plywood squares at each end, corner and at maximum 4 feet (1.22 m) on centers.

   2. Nylon or polypropylene rope or wire with a maximum unsupported span of 10 feet (3.05 m), minimum 1/4 inch (6.35 mm) in diameter suspended between supports securely fastened on either side of opening at maximum 1 foot (304.8 mm) below ceiling. Tighten rope so that it has 2 inches (50.8 mm) maximum dip. Drape plastic over rope from outside Work Area so that a two foot long flap of plastic extends over rope into Work Area. Staple or wire plastic to itself 1 inch (25.4 mm) below rope at maximum 6 inches (152 mm) on centers to form a sheath over rope. Lift flap and seal to ceiling with duct tape or spray cement. Seal loop at bottom of flap with

duct tape. Erect entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

E. **Provide Pressure Differential System** per Section 01513.

1. Clean housings and ducts of all overspray materials prior to erection of any Critical Barrier that will restrict access.

3.8 PREPARE AREA:

A. **Scaffolding:** If fixed scaffolding is to be used to provide access HEPA vacuum and wet clean area prior to scaffolding installation.

B. **Remove all electrical and mechanical items**, such as lighting fixtures, clocks, diffusers, registers, escutcheon plates, etc. which cover any part of the surface to be worked on with the work.

C. **Remove all general construction items** such as cabinets, casework, door and window trim, moldings, ceilings, trim, etc., which cover the surface of the work as required to prevent interference with the work. Clean, decontaminate and reinstall all such materials, upon completion of all removal work with materials, finishes, and workmanship to match existing installations before start of work.

D. **Clean all contaminated furniture**, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning, as specified in Section 01712 Cleaning and Decontamination Procedures, prior to being moved or covered. All equipment, furniture, etc. is to be deemed contaminated unless specifically declared as uncontaminated on the drawings or in writing by the Designer.

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E. **Clean All Surfaces In Work Area** with a HEPA filtered vacuum or by wet wiping prior to the installation of primary barrier.

F. **Cleaning and Sealing Surfaces:** After cleaning with water and a HEPA vacuum, surfaces of stationary objects should be covered with two layers of plastic sheeting. The sheeting should be secured with duct tape or an equivalent method to provide a tight seal around the object.

3.9 PRIMARY BARRIER:

A. **Protect building and other snrfaces** in the Work Area from damage from water and high humidity or from contamination from asbestos-containing debris, slurry or high airborne fiber levels by covering with a primary barrier as described below.

1. Strippable Coating: Protect surfaces in the Work Area with a strippable coating. Perform all work in strict compliance with manufacturer's instructions. Carry out work in the following sequence.

a. Inspect: Before start of coating work inspect all surfaces to be coated. Report on any surfaces that may be damaged by the material or any condition that may interfere with adhesion of the coating to a surface to the Designer before application of coating.

b. Photograph or videotape existing damage to affected surfaces and submit documentation to Designer.

c. Test Patches: Apply test patches as directed by Owner or Designer. Apply a small area of strippable coating to a hidden or obscure area of each surface in the Work Area to be coated. Allow to dry and peal off. Demonstrate results to Designer prior to coating entire area. Commence coating of area only after receiving written authorization from the Designer.

d. Cover surfaces and equipment in work are from which coating may not strip cleanly.

e. Cover shelving, clocks, light fixtures and other equipment with one layer of 6 mil (0.15 mm) sheet plastic.

f. Cover fabric, paper, cork wall coverings or unpainted gypsum board with one layer of 6 mil (0.15 mm) sheet plastic.

g. Tape over any cracks that are larger than 1/16 inch (1.59 mm).

h. Tape over electrical outlets, switches, door locks etc.

i. Wood paneling in area may have the finish partially removed by the strippable coating. These surfaces are to be coated directly with strippable coating and are not to be covered with sheet plastic. Refinishing of the this paneling will be accomplished by the Owner and is not a part of the work of this contract.

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1) Cover wood paneling in Work Area with one layer of 6 mil (0.15 mm) sheet plastic.

2) Apply small area of coating in concealed location to wood finishes in Work Area. If finish is removed when coating is stripped inform Designer. Cover wood surface with one layer of 6 mil (0.15 mm) sheet plastic unless otherwise notified by Designer.

3) Base bid is for direct coating of wood paneling.

4) If a layer of sheet plastic is necessary this will be a change to the Contract Sum. Submit proposal for change in Contract Sum for the addition of sheet plastic to the Designer.

j. Cover carpeting with three (3) layers of polyethylene sheeting at least 6 mil (0.15 mm) in thickness. Place corrugated cardboard sheets between the top and middle layers of polyethylene.

k. Do not use strippable coating as an adhesive to hold sheet plastic in place.

l. Coat or cover windows into Work Area:

1) Coat windows with window coating applied in a minimum 10 mil (0.254 mm) thickness when wet.

2) Cover windows with one layer of 6 mil (0.15 mm) sheet plastic. Cover

sheet plastic with a thin but continuous coat of window or wall coating.

3) Cover windows with one layer of black 6 mil (0.15 mm) plastic.

m. Protect critical barriers: Install strippable coating so that it will not remove critical barriers during stripping of coating. Cover critical barriers comprised of sheet plastic with a second layer of sheet plastic configured to be removed with strippable coating. Protect critical barriers made from tape with a protective layer of sheet plastic or duct tape.

n. Coat all surfaces in Work Area with strippable coating in following order.

1) Walls: Coat seams, corners, and junctions vertically. Coat balance of walls horizontally lapping over vertical sprayed areas by 50%.

2) Floor: Coat floor lapping wall by 12 inches (305mm). Start at point furthest from entrance to Work Area and work toward door.

3) Use straight edge to shield ACM from coating during spray application.

o. Apply: to a minimum of the following thicknesses. Thickness is to be measured when material is wet using a wet film thickness gauge.

SURFACE TO BE COATED	MINIMUM THICKNESS WHEN WET	REQUIRED COATING TYPE
Critical Barriers	Not Applicable	Sheet Plastic Covers
Glass	10 mil (0.254 mm)	Window Coating
Plastic Over Glass	2 mil (0.051 mm)	Wall Coating
Paneling Painted Walls, Wall Covering,	12 mil (0.305 mm)	Wall Coating
Glazed Tile Smoothly Painted Brick, Painted Concrete Block	15 mil (0.381 mm)	Wall Coating
Floors	15 mil (0.381 mm)	Floor Coating
Unpainted Brick, Unpainted Concrete Block, Rough Wood	20 mil (0.51 mm)	Wall Coating

"NOT FOR BIDDING"

1) Coat brick and concrete block with a sufficient thickness of coating to obscure color of substrate completely.

2) Do not apply over tacky or chalky adhesives remaining from carpet or

other flooring covering removal.

p. Respiratory protection: Require that all workers in Work Area from start of spray operation until all surfaces are dry use as a minimum requirement a half-face negative pressure respirator equipped with combination ammonia and HEPA type filter cartridges or other appropriate respiratory protection as required by OSHA 29 CFR 1926.1101(h)(2) and as specified in Section 01562 Respiratory Protection.

q. Worker protection: Equip all workers in Work Area during spray operation with eye protection, disposable gloves, and disposable paper suits.

r. Ventilation: during spraying operation maintain a minimum of 4 air changes per hour in the entire Work Area. Operate one additional HEPA filtered fan unit per spray operator in area while spraying is taking place.

2. Sealing Elevators: If an elevator shaft is located in the regulated area, it should be either shut down or isolated by sealing with two layers of plastic sheeting. The sheeting should provide enough slack to accommodate the pressure changes in the shaft without breaking the air-tight seal.

3. Elevator: Coat walls, floor and ceiling of elevator in same manner as Work Area. Arrange entry to Work Area so that elevator door is in a positively pressurized space outside the clean room of the decontamination unit. At completion of work clean elevator as set forth in Section 01711. Refer to Section 01013 Summary of the Work for additional requirements for protection of elevator.

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4. Sheet Plastic: Protect surfaces in the Work Area with two (2) layers of plastic sheeting on floor and walls, or as otherwise directed on the Contract Drawings or in writing by the Designer. Perform work in the following sequence.

a. All seams in the sheeting should overlap, be staggered and not be located at corners or wall-to-floor joints.

b. Cover Floor of Work Area with 2 individual layers of clear polyethylene sheeting, each at least 6 mil (0.15 mm) in thickness, turned up walls at least 12 inches (305 mm). Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.

c. Cover Carpeting with three (3) layers of polyethylene sheeting at least 6 mil (0.15 mm) in thickness. Place corrugated cardboard sheets between the top and middle layers of polyethylene.

d. Cover Sheet Plastic in areas where scaffolding is to be used with a single layer of ½ inch (13 mm) CDX plywood or 1/4 inch (6.5 mm) tempered hardboard. Wrap edges and corners of each sheet with duct tape. At completion of abatement work wrap plywood or hardboard with 2 layers of 6 mil (0.15 mm) polyethylene and move to next Work Area or dispose of as an asbestos-contaminated waste material in accordance with section 02084 of this specification.

e. Cover all walls in Work Area including "Critical Barrier" sheet plastic barriers with

one layer of polyethylene sheeting, at least 6 mil (0.15 mm) in thickness, mechanically supported and sealed with duct tape or spray-glue in the same manner as "Critical Barrier" sheet plastic barriers. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated on the Contract Documents or in writing by the Designer.

f. Elevator: Cover walls, floor and ceiling of elevator with 2 layers of 6 mil (0.15 mm) polyethylene. Arrange entry to Work Area so that elevator door is in a positively pressurized space outside the clean room of the decontamination unit. At completion of work clean elevator as set forth in Section 01711. Refer to Section 01013 Summary of the Work for additional requirements for protection of elevator.

g. Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide 3/4 inch (19.1 mm) exterior grade plywood treads securely held in place, over plastic. Do not cover rungs or rails with any type of protective materials.

h. Repair of Damaged Polyethylene Sheeting: Remove and replace plastic sheeting which has been damaged by removal operations or where seal has failed allowing water to seep between layers. Remove affected sheeting and wipe down entire area. Install new sheet plastic only when area is completely dry.

3.10 ISOLATION AREA:

A. **Maintain isolation areas** between the Work Area and adjacent building area:

1. In locations shown on the plans.

"NOT FOR BIDDING"

2. In unoccupied rooms located between Work Area and adjacent occupied portions of the building.

3. In locations where separation between Work Area and occupied portions of building is formed by sheet plastic and/or temporary barriers.

4. Floor below Work Area.

B. **Form isolation area** by controlling access to the space in the same manner as a Work Area. Physically isolate the space from the Work Area and adjacent areas. Accomplish physical isolation by:
1. Installing critical barriers in unoccupied space.
2. Erecting a second Critical Barrier a minimum of 3 feet (1.0 m) away from Work Area.

3.11 STOP WORK:

A. **If the Critical or Primary barrier falls** or is breached in any manner stop asbestos removal work immediately and comply with "Stop Work" requirements of Section 01013 "Summary of Work - Asbestos Abatement". Do not start work until authorized in writing by the Designer.

3.12 EXTENSION OF WORK AREA:

A. **Extension of Work Area:** If the Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the Work Area, enclose it

as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

3.13 SECONDARY BARRIER:

A. **Secondary layer** of plastic as a drop cloth to protect the primary layer from debris generated by the asbestos abatement work is specified in the appropriate work sections.

3.14 EXTERIOR ENCLOSURES:

A. **Construct exterior enclosures** as a Critical Barrier as necessary to completely enclose the work. Fabricate from reinforced polyethylene sheeting and 2 inch x 4 inch (51mm X 102 mm) wood framework. Attach to existing building components or brace as necessary for lateral stability. Construct walls to meet all state and local regulations for construction of temporary buildings. Construct to resist a wind of 30 MPH (13.41 m/s), slope ceiling to permit drainage of rain water.

END OF SECTION - 01526

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SECTION 01527 - REGULATED AREAS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. **Worker Protection:** is specified in Section 01561 "Worker Protection - Repair and Maintenance".

B. **Respiratory Protection:** is specified in Section 01562 "Respiratory Protection"

C. **Wet Decontamination Facilities:** are described in Section 01563 "Decontamination Units."

1.3 DESCRIPTION OF WORK:

A. Work of this section consists of preparing a Regulated Area for work of the following specification sections only. Do not use procedures set forth in this section in connection with any other work.

1. Section 01046 Cutting & Patching Asbestos Containing Materials
2. Section 01528 Entry Into Controlled Areas
3. Section 01529 Mini Enclosures and Glovebags
4. Section 01712 Cleaning and Decontamination Procedures
5. Section 02083 Disturbance of ACM During O&M Work
6. Section 09251 Gypsum Drywall - Asbestos Enclosures
7. Section 15254 Repair of Insulation and Lagging

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1.4 SUBMITTALS

A. **Before the Start of Work:** Submit the following to the Designer for review. Begin no work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

1. HEPA Filtered Vacuum Cleaners: Submit product data.
2. Signs: Submit samples of each type of sign to be used.
3. Warning Tape: Submit samples.

PART 2 - EQUIPMENT

2.1 PRODUCTS

A. **HEPA Filter Vacuum Cleaners:**

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limitedto, the following:

2. Manufacturer: Subject to compliance with requirements, provide products of one of the Following:

Nilfisk of America, Inc. 225 Great Valley Parkway Vacuums Malvern, PA 19355 (800) 645-3475	HEPA filtered
Minuteman International 111 South Route 53 Addison, IL 60101 (708) 627-6900	Minuteman HEPA Vacuums
Pullman-Holt (White) Corp. PO Box 16647 Tampa, FL 33617 (813) 645-3475	HEPA Filtered Vacuums

B. Plastic Sheet:

1. Plastic Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil (0.15 mm) thick , clear, frosted, or black as indicated.

PART 3 - EXECUTION

"NOT FOR BIDDING"

3.1 SECURING WORK AREA:

A. **Secure work** area from access by occupants, staff or users of the building. Accomplish this where possible, by locking doors, windows, or other means of access to the area, by scheduling work for periods of time that the building in unoccupied, or by constructing temporary wood stud and plywood barriers.

3.2 DEMARCATION OF REGULATED AREA:

A. **Demarcation.** Demarcate the Regulated Area with a sheet plastic drop cloth, signs and barrier tape. Configure the regulated area in a manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne concentrations of asbestos.

1. Drop Cloth: Cover floor in vicinity of Work Area and six (6) feet (1.82 meters) beyond, with 6 mil (0.15 mm) polyethylene drop sheet. Where work is adjacent to wall, extend drop sheet up wall and secure at ceiling with duct tape. This drop sheet demarcates the boundary of the Regulated Area.

2. Signs: Post warning signs that carry the following legends in both English and Spanish:

   a. First Sign: Provide warning signs at each locked door leading to the controlled area reading as follows:

Legend	**Notation**
KEEP OUT	3 inch (76.2 mm)Block

b. Second Sign: Immediately inside the locked door and outside the controlled area post an approximately 20 inch by 14 inch (508 mm x 356 mm) manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

Legend:

DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

3. Barrier Tape: Where the controlled area is in a large area such as on part of a boiler room or open office area, delineate area with 3 inch (76.2 mm) wide polyethylene ribbon with the printed warning, "CAUTION ASBESTOS REMOVAL". Install this ribbon at between 3 and 4 feet (0.91 and 1.22 meters) above the floor.

3.3 SCHEDULING:

A. **Work may be carried out** during normal working hours in those areas which can be completely secured by lockable doors from access by building occupants and staff, and which have HVAC equipment that can be shut down and locked off. Otherwise, work is to be carried out after building occupants and cleaning staff have left.

"NOT FOR BIDDING"

3.4 GENERAL PROCEDURES:

A. **The following precautions and procedures** have application to work of this section. Workers must exercise caution to avoid release of asbestos fibers into the air:

1. Setup and management of the controlled area is to be under the supervision of a OSHA Competent Person as described in Section 01043 Project Coordination - Asbestos Abatement.
2. Before start of work comply with requirement for worker protection in section 01561, and respiratory protection in section 01562.
3. Do not allow eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics in the Regulated Area.
4. Shut down any air handling equipment bringing air into or out of the Regulated Area.
5. Clean any existing dust or debris from the floor and walls, and other surface in the immediate location of the work prior to commencing work by damp-mopping or by use of a High Efficiency Particulate Air (HEPA) filtered vacuum.
6. Cover floor in vicinity of Work Area and six (6) feet (1.82 meters) beyond, with 6 mil (0.15 mm) polyethylene drop sheet. Where work is adjacent to wall, extend drop sheet up wall and secure at ceiling with duct tape. This drop sheet demarcates the boundary of the Regulated Area.
7. Seal all openings, supply and exhaust vents, and convectors within ten (10) feet (3.05 meters) of the Work Area with 6 mil (0.15 mm) polyethylene sheeting

secured and completely sealed with duct tape.

8. Perform the work per the appropriate specification section while on plastic drop sheet.
9. Immediately remove any asbestos-containing debris which collects on the drop sheet either by using a HEPA vacuum or by spraying with amended water or removal encapsulant, collecting with wet paper towels, placing in a disposal bag while still wet, and cleaning surface of plastic sheet with wet paper towels.
10. Complete the following at completion of work in an area before stepping off drop sheet

    a. While standing on plastic sheet thoroughly HEPA vacuum ladder and any tools used and pass to worker standing off sheet.

    b. Worker standing off the sheet HEPA vacuum thoroughly the worker standing on the sheet.

    c. Worker on the sheet thoroughly HEPA vacuum all surfaces of the plastic sheet, bags, and any other items on the sheet including the worker's feet.
11. If moving to the next Work Area in the same secured area: Worker on the drop sheet is to don clean foot covers, placing each foot, in turn, off the sheet as the foot cover is put on. Remove clean foot covers at the next Work Area while standing on the sheet. Dispose of the used foot covers along with the plastic sheet at completion of work in that area. Do not reuse foot covers to move off the sheet.
12. If work day is complete or if next Work Area is in another secured area: all workers remove paper suits turning them inside out while doing so. The person on the sheet steps with each foot off the sheet as the foot covers are removed.
13. Fold sheet and all its contents toward the center.
14. Place the sheet in a properly labeled disposal bag.
15. Neck down the bag and collapse it with the HEPA vacuum.
16. Twist the bag shut, bend over and seal with duct tape by wrapping around bag neck at least 3 times.
17. Clean all surfaces of the Work Area by use of a HEPA filter vacuum until no visible residue remains.

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B. **At completion of work** require all workers to complete decontamination procedures in accordance with Section 01561 Worker Protection - Repair & Maintenance.

C. **Remove respirators** using the procedure in Section 01561 Worker Protection - Repair & Maintenance.

D. **At completion of work** require all workers to complete wet decontamination procedures in accordance with Section 01560 Worker Protection - Asbestos-Abatement.

END OF SECTION - 01527

SECTION 01528 - ENTRY INTO CONTROLLED AREAS

ART 1 GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **The provisions of this section apply** when entry is required into an area where such entry could cause contamination of portions of the building and/or where respiratory or other worker protection measures are required.

B. **Unless authorized in writing** by the Designer, the provisions of this section apply to only the following situations:

1. Entry into the space above a suspended ceiling where there is exposed friable asbestos- containing fire proofing, visible asbestos-containing debris, or other friable asbestos- containing surfacing material when the ceiling tiles in an area no greater than 6 feet by 12 feet (1.83 x 3.66 meters) area to be removed.

2. Entry through sealed access (access door, hatchway, locked door) into an area with friable asbestos-containing surfacing materials or visible debris.

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C. **Worker Protection:** Use procedures of this section only where a negative exposure assessment has been made for these procedures. Historic airborne fiber data demonstrate that personal airborne fiber counts in the breathing zone of those performing the work can be continuously maintained at less than 0.1 fibers per cubic centimeter can be used as a part of this assessment.

D. **Area Protection:** Use procedures of this section only where historic airborne fiber data demonstrate that area samples in the work area can be continuously maintained at less than 0.01 fibers per cubic centimeter.

1.3 SUBMITTALS:

A. **Before the Start of Work:** Submit the following to the Designer for review. Begin no work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

1. Historic Airborne Fiber Data: Submit airborne asbestos fiber count data from an independent air monitoring firm to demonstrate:

   a. The ability to perform work of this section while maintaining an airborne fiber count below 0.1 fibers per cubic centimeter in the breathing zone of the individual performing the work.

b. The ability to perform work of this section while maintaining an airborne fiber count below 0.01 fibers per cubic centimeter in the work area.

2. Include the following data for each procedure required by the work:
   a. Date of measurements
   b. Operations monitored
   c. Sampling and analytical methods used and evidence of their accuracy
   d. Number, duration, and results of samples taken

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 REGULATED AREA:

A. **Prior to beginning work** in this area establish a regulated area as described in Section 01527 Regulated Areas.

3.2 ACCESS THROUGH SUSPENDED CEILINGS:

A. **Remove acoustical panels** from ceiling suspension system using the following sequence:

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1. Follow worker protection procedures including disposable coveralls and respirators required by Section 01560, and Section 01561.
2. Follow local area protection procedures of Section 01528. Spread layer of 6 mil (0.15 mm) polyethylene sheet on floor 6 feet (1.83 meters) further in extent than the size of the ceiling opening to be made.
3. HEPA vacuum around edges of all panels to be removed.
4. While holding nozzle of HEPA vacuum in vicinity slowly lift one edge of center ceiling panel. Immediately HEPA vacuum space at lifted edge. Lift entire panel straight up and HEPA vacuum all four sides.
5. Place panel on top of adjacent ceiling.
6. Place intake duct to HEPA Filtered Fan Unit per Section 01513 in space above ceiling and fasten in place. Operate machine continuously while ceiling is open.
7. Note that the operation of the HEPA vacuum is intended to clean the air in the location of the work. As such the nozzle should be kept above the ceiling as much as possible and the canister on the floor.
8. Climb to a position which permits access to the top of the ceiling adjacent to the removed panel.
9. Working in the space above the ceiling, HEPA vacuum both sides of the ceiling panel first removed and hand it down into a 6 mil (0.15 mm) polyethylene bag for storage.
10. Remove loose material hanging from the friable asbestos- containing material with the suction from the HEPA vacuum.
11. Pass wand of operating HEPA vacuum through air between asbestos-containing material and top of ceiling.
12. HEPA vacuum the tops of all ceiling panels which are in reach.

13. Carefully HEPA vacuum the crack between the suspension system and ceiling panels from the top for all ceiling panels within reach.
14. Remove ceiling panels as required while constantly HEPA vacuuming all four edges of panel and suspension system.
15. Working in space above ceiling HEPA vacuum both sides on each panel removed and hand each down into a 6 mil (0.15 mm) polyethylene bag which is labeled as set forth is Section 02084.
16. Maintain HEPA vacuum in operation with nozzle above ceiling and exhaust at floor for the entire time that the ceiling is open and work is being done above the ceiling.
17. When above-ceiling work is complete replace ceiling panels.
18. HEPA vacuum worker's head, arm, and shoulders before climbing down from ceiling.
19. HEPA vacuum ladder while climbing down.
20. While standing on plastic sheet thoroughly HEPA vacuum ladder and pass it to person standing off sheet.

3.3 ENTRY INTO CONTROLLED AREAS:

A. **Use same procedure as above** except that ceiling tiles do not need to be removed.

B. **If access is through a wall hatch or door**, duct tape floor sheet to wall or threshold.

C. **If access is into large area** such as crawl tunnel, comply with worker protection requirements but use HEPA vacuum only for work procedures in the area.

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3.4 PERSONNEL DECONTAMINATION:

A. **At the end of all work** change to a clean disposable coverall and leaving respirator in place proceed to a remote shower and decontaminate as required by Section 01560 Worker Protection - Asbestos Abatement.

B. **Complete dry decontamination** procedures set forth in Section 01561 "Worker Protection - Repair & Maintenance."

END OF SECTION - 01528

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SECTION 01529 - MINI ENCLOSURES AND GLOVEBAGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF THE WORK:

A. **Work of this section** consists of preparing a Regulated Area for work for which there is no negative exposure assessment or that involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material. This is Class III OSHA work, and is limited in size to operations that generate small amounts of ACM, i.e., no more than can be contained in one standard (60 inch x 60 inch) glove or waste bag filled no more than 1/3 to 1/2 full.

1.3 SUBMITTALS:

A. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

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2. Removal Encapsulant: Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

3. NESHAP Certification: Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet ACM to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M).

4. Material Safety Data Sheet: Submit Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communications Standard (29 CFR 1910.1200) for each surfactant and encapsulating material proposed for used. Submit in the same manner as product data. Submittal is for information purposes only. Submittal will not be reviewed by Designer.

5. Spray Cement: Submit following:

   a. Product description including major components and solvents

   b. Manufacturer's installation instructions. Indicate portions applicable to the project

6. Sheet Plastic: For fire retardant plastic submit test reports on NFPA 701 test.

7. Glovebags: Submit product data.

8. HEPA Vacuums: Submit product data

9. Signs: Submit samples of signs to be used.

10. Mini-enclosure: Provide shop drawing of mini-enclosure arrangement to used.

B. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are retnrned with the Designer's action stamp indicating that the submittal has been' "Received - Not Reviewed."

1. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:

   a. Surfactants.
   b. Spray Cement.
   c. Encapsulants.

PART 2 - PRODUCTS

2.1 GLOVE BAGS:

A. **Glovebags:** Provide minimum 6 mil (0.15 mm) thick polyethylene, polyvinyl chloride or equivalent plastic sack, with a seamless bottom, and two sealed inward projecting long sleeved gloves or mittens, preprinted with same warning notice as disposal bag, equipped with a pouch for storage of tools, with designated location for wand or HEPA vacuum wand. Glove bag is to be not more than 60 inches by 60 inches in size.

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B. **Negative Pressure Glove Bag Systems:** Provide glovebags as specified above that are equipped for attachment to a HEPA vacuum, and that has a device to prevent the bag from collapsing during use.

C. **Negative Pressure Glove Box Systems:** Provide glove boxes constructed with rigid sides and made from metal or other material, equipped for attachment to a HEPA vacuum, which will not collapse during use, and which can withstand the weight of the ACM and water used during removal. Provide system equipped with:

1. An air filtration unit attached to the box

2. The box fitted with gloved apertures

3. An aperture at the base of the box to serve as a bagging outlet for waste ACM and water

4. Provide waste bags made of 6 mil (0.15 mm) thick plastic labeled as set forth in section 02084 "Disposal of Regulated Asbestos-Containing Material".

5. A HEPA filtration system (or HEPA vacuum)to maintain pressure barrier in box.

2.2 SHEET PLASTIC:

A. **Polyethylene Sheet:** A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil (0.15 mm) thick, clear, frosted, or black as indicated.

B. **Polyethylene Sheet:** Provide 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, 6.0 mil (0.15 mm) thick , frosted or black as indicated.

C. **Reinforced Polyethylene Sheet:** Where plastic sheet constitutes the only barrier between the Work Area and the building exterior, provide translucent, nylon reinforced or woven polyethylene, 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, 6.0 mil (0.15 mm) thick, frosted or black as indicated.

2.3 MISCELLANEOUS MATERIALS:

A. **Duct Tape:** Provide duct tape in 2 inch or 3 inch (51 mm or 76 mm) widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

B. **Spray Cement:** Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

C. **Wetting Materials:** For wetting prior to disturbance of ACM use either amended water or a removal encapsulant:

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1. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a solution of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2. Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of ACM. Use a material which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a solution of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

D. **Encapsulants** are specified in Section 09805.

E. **Garden Sprayer:** Provide a hand pump type pressure-can garden sprayer fabricated out of either metal or plastic, equipped with a metal wand at the end of a hose that can deliver a stream or spray of liquid under pressure.

PART 3 - EXECUTION

3.1 GENERAL:

A. **Before Start of Work:** Complete the following before start of work of this section:

1. 01527 Regulated Areas

3.2 WORKER PROTECTION:

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

3.3 GLOVE BAGS AND BOXES:

A. **Complete requirements** of the following:

1. 01562 Respiratory Protection
2. 01561 Worker Protection - Repair and Maintenance

B. **Glovebag:** Remove ACM inside a glove bag according to the following procedure:

1. Use at least two persons to perform glovebag removals operations.
2. Use each glovebag only once
3. Do not move glovebag once it has been mounted in place.
4. Do not use glovebag on surface whose temperature exceeds 150°F (65.6°C).
5. Check materials adjacent to locations where glovebag will be installed. Wrap damaged (broken lagging, hanging, etc.), loose or friable material in 2 layers of 6 mil (0.15 mm) plastic and "candy-stripe" with duct tape, or render material intact by some other method. Place one layer of duct tape around undamaged pipe at each location where the glove bag will be attached.

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6. Slit top of the glove bag open (if necessary) and cut down the sides to accommodate the size of the pipe (about two inches longer than the pipe diameter) and allow additional so that the top of the glove bag will be clear of the pipe after installation.
7. Place necessary tools into pouch located inside glove bag. This will usually include: bone saw, utility knife, rags, scrub brush, wire cutters, tin snips and pre-wetted cloth.
8. Place a strip of duct tape along both edges of the open top slit of glove bag for reinforcement.
9. Place the glove bag around section of pipe to be worked on and staple top together through reinforcing duct tape. Staple down sides approximately 6 inches so that top of the glove bag is clear of pipe. Seal top and sides with duct tape. Next, duct tape the ends of glove bag to pipe itself, where previously covered with plastic or duct tape.
10. Install glovebag so that it completely covers the circumference of pipe or other structures where the work is to be done.
11. Use smoke tube and aspirator bulb to test seal. Place tube into water sleeve (two-inch opening to glove bag) squeezing bulb and filling bag with visible smoke. Remove smoke tube and twist water sleeve closed. While holding the water sleeve tightly, gently squeeze glove bag and look for smoke leaking out, (especially at the top and ends of the glove bag). If leaks are found, tape closed using duct tape and re-test.
12. Insert wand from garden sprayer through water sleeve. Duct tape water sleeve tightly around the wand to prevent leakage.
13. Thoroughly wet material to be worked on with amended water or removal encapsulant and allow to soak in. Wet adequately to penetrate and soak material through to substrate.
14. One person places their hands into the long-sleeved gloves while the second person directs garden sprayer at the work.

15. Use bone saw, if required, to cut insulation at each end of the section to be removed. A bone saw is a serrated heavy gauge wire with ring-type handles at each end. Throughout this process, spray amended water or removal encapsulant on the cutting area to keep dust to a minimum.
16. Remove insulation using putty knives or other tools. Place pieces in bottom of bag without dropping.
17. Rinse all tools with water inside the bag and place back into pouch.
18. Using scrub brush, rags and water, scrub and wipe down the exposed pipe.
19. Thoroughly wash and wipe down interior of glovebag to a point below the location where the bag will be twisted and taped to seal waste in bottom of bag.
20. Remove water wand from water sleeve and attach the small nozzle from HEPA-filtered vacuum. Turn on the vacuum only briefly to collapse the bag.
21. Remove the vacuum nozzle, twist water sleeve closed and seal with duct tape.
22. From outside the bag, pull the tool pouch away from the bag. Place duct tape over twisted portion and then cut the tool bag from the glove bag, cutting through the twisted/taped section. Contaminated tools may then be placed directly into next glove bag without cleaning. Alternatively, tool pouch with the tools can be placed in a bucket of water, opened underwater, and tools cleaned and dried. Discard rags and scrub brush with asbestos waste.
23. With removed insulation in the bottom of the bag, twist the bag several times and tape it to seal material in the bottom during removal of the glove bag from the pipe.
24. Slip a 6 mil (0.15 mm) disposal bag over the glove bag (still attached to the pipe). Remove tape or cut bag and open the top of the glove bag and fold it down into disposal bag.
25. Clean all surfaces in the Work Area using disposable cloths wetted with water with surfactant or removal encapsulant added. When these surfaces have dried, clean with a HEPA filtered vacuum. Material adhered to surface with removal encapsulant may require the application of additional removal encapsulant to facilitate cleaning.
26. Seal exposed ends of remaining pipe insulation in accordance with Section 15254.
27. Remove disposable suits and place these into bag with waste.
28. Collapse the bag with a HEPA vacuum twist top of bag, seal with at least 3 wraps of duct tape, bend over and seal again with at least 3 wraps of duct tape.

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C. **Negative Pressure Glove Bag Systems.** Remove ACM inside a negative pressure glove bag system according to the following procedure:

1. Use at least two persons to perform glovebag removals operations.
2. Use each glovebag only once
3. Do not move glovebag once it has been mounted in place.
4. Do not use glovebag on surface whose temperature exceeds 150°F (65.6°C).
5. Check materials adjacent to location where glovebag will be installed. Wrap damaged (broken lagging, hanging, etc.), loose or friable material in 2 layers of 6 mil (0.15 mm) plastic and "candy-stripe" with duct tape, or render material intact by some other method. Place one layer of duct tape around undamaged pipe at each location where the glove bag will be attached.
6. Install glovebag so that it completely covers the circumference of pipe or other structure where the work is to be done.
7. Install device used to prevent collapse of bag by negative pressure.
8. Smoke-test Glovebags for leaks and seal any leaks prior to use.
9. Run HEPA vacuum cleaner or other device used to create a negative pressure in the bag continuously during the operation.

10. Prior to disposal, collapse glovebag by removing air within it using a HEPA vacuum.
11. Where system uses attached waste bag, connect waste bag to collection bag using hose or other material which will withstand pressure of ACM waste and water without losing its integrity.

    a. Use sliding valve or other device to separate waste bag from hose to ensure no exposure when waste bag is disconnected.
12. Where a separate waste bag is used along with a collection bag and waste bag is discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

D. **Negative Pressnre Glove Box Systems:** Remove ACM inside a negative glove box system according to the following procedure:

1. Use at least two persons to perform the work.
2. Check materials adjacent to location where glovebox will be installed. Wrap damaged (broken lagging, hanging, etc.), loose or friable material in 2 layers of 6 mil (0.15 mm) plastic and "candy-stripe" with duct tape, or render material intact by some other method. Place one layer of duct tape around undamaged pipe at each location where the glove box will be attached.
3. Use system in accordance with manufacturer's instructions.
4. Smoke test box prior to each use
5. Use a HEPA Vacuum or other negative pressure generator with HEPA filtration to create a negative pressure in system
6. Provide a back-up HEPA Vacuum on site at all times during operation of the system.
7. Use waste bags made of 6 mil (0.15 mm) thick plastic double bag before filling.

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3.4 MINI-ENCLOSURES:

A. **A mini enclosure** is a small walk-in enclosure which accommodates no more than two persons. Provide a fabricated or job-made enclosure constructed of 6 mil (0.15 mm) plastic or equivalent. Place the enclosure under negative pressure by means of a HEPA filtered vacuum or similar HEPA filtered ventilation unit.

B. **Provide a remote personnel decontamination unit** meeting requirements of Section 01563 "Decontamination Units" for worker decontamination.

C. **Sequence of Work:** Before beginning work of this sub-section complete the following:

1. Isolation of area in accordance with Section 01527 "Regulated Area."
2. Construction of a personnel decontamination unit in accordance with Section 01563 Decontamination Units.

D. **Work Room:** Construct Work Room in the same manner as a Primary Barrier fabricated from 6 mil (0.15 mm) sheet plastic. Arrange so that Primary Barrier provides both a Critical and Primary Barrier. Line walls and floor of Work Room with a continuous Secondary Barrier.

E. **Change Room:** Provide an approximately 3 feet by 3 feet (0.9 m x 0.9 m) Change Room, with additional space as required for storage, attached to each Work Room. Fabricate Change Room from 6 mil (0.15 mm) sheet plastic in the same manner as a Primary Barrier. Locate so that access

to Work Area is though Change Room.

F. **Step Off Area:** Cover floor in front of entry to Change Room with one layer of 6 mil (0.15 mm) sheet plastic. Securely anchor sheet plastic to prevent slipping.

G. **Flapped Door Construction:** Provide flapped door as entry to Chauge Room and entry from Change Room to Work Room. Fabricate each flapped door from overlapping contacting layers of sheet plastic. Fasten each layer on the top and one side. Each flap is to be 3 inches (76 mm) longer than door opening. Reinforce free side and bottom of each sheet with duct tape. Alternate sides that are fastened on each layer. Form arrows pointing to entry side from duct tape on inside and outside of door.

H. **Signage:** At entry to Change Room post an approximately 20 inch by 14 inch (508 mm x 356 mm) manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

Legend

DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

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1. Provide spacing between respective lines at least equal to the height of the respective upper line.

I. **Complete requiremeuts** of the following:

1. Section 01560 Worker Protection - Asbestos Abatement

2. Section 01562 Respiratory Protection

3. Section 01513 Temporary Pressure Differential & Air Circulation System: HEPA filtered vacuum cleaner with vacuum in space outside Mimi-Enclosure may be used for compliance with this section. Provide a minimum of 8 air changes per hour in the Work Room.

J. **Testing:** The mini-enclosure shall be inspected for leaks and smoke tested to detect breaches, and breaches sealed.

K. **Entry to Work Room:** Require that any time a worker enter the Work Room the following procedure is followed.

1. Outside of Change Room remove all street clothes and don clean coveralls and respirator. A swim suit or second disposable suit may be worn beneath outer coveralls.

2. Enter Change Room be sure that entry is completely closed.

3. Enter Work Room be sure that entry is completely closed.

L. **WorkProcedures:** Arrange work area within the mini-enclosure so that during use air movement is directed away from the worker's breathing zone.

M. **Worker Decontamination:** Require that any time a worker leaves the mini-Enclosure the following procedure be followed.

1. Maintain a bucket of clean potable water in the Work Area. Do not amend with a wetting agent.
2. Remove contaminated suit inside the Work Area. Leave respirator in place.
3. Wash hands, face and surface of respirator with water and wet paper towels. Use caution to avoid breaking seal between respirator face-piece and face.
4. Proceed with respirator in place to Change Room.
5. Be sure that entry to Work Area is completely closed.
6. In Change Room don clean disposable suit leaving respirator in place.
7. Exit change room be sure that entry to Change Room is completely closed. Proceed to next Mini-Enclosure, or a remote shower.
8. At end of work day decontaminate fully in accordance with procedures in appropriate specification section describing Worker Protection.

N. **Material Decontamination:** Require that the following procedure be used in removing equipment and bagged debris from the Work Room.

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1. Three workers are required. One in the Work Room, one in the Change Room, and one on Step Off Area.
2. Equipment and bagged debris are to be removed from the Mini-Enclosure in separate operations.
3. Worker in Work Room cleans equipment and bagged debris and hands one piece of equipment or one bag of debris at a time to worker in Change Room.
4. Worker in Change Room wet cleans each piece of equipment or bag and stores them in Change Room. Equipment is sealed completely in 6 mil (0.15 mm) sheet plastic in the Change Room.
5. When the amount of stored material in the Change Room becomes large enough that the worker cannot clean incoming material without contacting previously cleaned material the door between the Work and Clean Room is closed.
6. The worker in the Changing Room then passes each item into a new disposal bag held open in the doorway between the Changing Room and Step Off Area by the worker on the Step Off Area. The Worker on the Step Off Area places each bag in a sealed cart for transport to the load out area. No bags are to be stored outside of the Mini-Enclosure.
7. All bags are to be transported through the building in clean sealed containers that have never been in a asbestos Work Area, Mini-Enclosure or decontamination unit.

O. **Mini-Enclosure Decontamination:** At completion of all work decontaminate the Work and Changing Rooms as set forth in Section 01711 Project Decontamination for non-friable materials.

END OF SECTION - 01529

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01560 - WORKER PROTECTION - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. **Respiratory Protection:** is specified in Section 01562.

1.4 WORKER TRAINING:

A. **AHERA Accreditation:** All workers are to be accredited as Abatement Workers as required by the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

B. **State and Local License:** All workers are to be trained, certified and accredited as required by state or local code or regulation.

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C. **Training - Class I:** Train in accordance with 29 CFR 1926.1101. Provide training for all workers who will perform Class I operations that is the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

D. **Training - Class II Intact (Non-Friable):** Provide training for workers who will be performing Class II work involving only the removal and/or disturbance of one generic category of building material, such as roofing materials, flooring materials, siding materials or cement asbestos panels; which includes as a minimum the specific work practices and engineering controls which specifically relate to that category. Provide a course that includes "hands-on" training and takes at least 8 hours. Provide training that includes the elements set forth in 29 CFR 1926.1101(k) and the Compliance Directive CPL 2-2.63.

E. **Training - Class II Non-Intact (Friable):** Provide training for workers who will be performing Class II work on materials that are friable, or will become friable during the work that is the equivalent in curriculum, training method and length to the EPA Interim Final Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

1.5 MEDICAL SURVEILLANCE:

A. **Provide a medical surveillance program** for all employees who are:

1. engaged in Class I, II and III work for a combined total of 30 or more days per year or,

a. For the purposes of this paragraph, any day in which a worker engages in Class II or Class III work or a combination thereof for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in the OSHA standard (29 CFR 1926.1101) is not counted.

2. are exposed at or above the permissible exposure limit or excursion limit or,

3. before an employee can be assigned to work requiring use of a respirator.

B. **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) .

C. **Provide medical examination** that as a minimum meets OSHA requirements as set forth in29 CFR 1926.1101. 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.

1.6 SUBMITTALS:

A. **Before Start of Work:** Submit the following to the Designer for review. Do not start work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. **AHERA Accreditation:** Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the EPA Interim Final Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

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2. **State and Local License:** Submit evidence that all workers have been trained, certified and accredited as required by state or local code or regulation.

3. **Certificate Worker Acknowledgment:** Submit an original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the Work Area.

4. **Training Program:** Submit a course outline of the worker training course. Include date and time course was given, name and title of teacher.

5. **Report from Medical Examination:** conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:

a. Name and Social Security Number

b. The physician's written opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos;

c. Any recommended limitations on the employee or on the use of personal protective equipment such as respirators; and

d. A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

e. A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure (29 CFR 1926.1101(m)).

f. A legible typed version of the physician's name, the physician's signature, and date of examination.

6. **Notarized Certifications:** Submit certification signed by an officer of the abatement contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.

PART 2 - EQUIPMENT

2.1 PROTECTIVE CLOTHING:

A. **General.** Provide and require the use of protective clothing, such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit prescribed by 29 CFR 1926.1101 or for which a required negative exposure assessment is not produced, and for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet (7.5 linear meters or 3 square meters) of TSI or surfacing ACM or PACM.

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B. **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.

C. **Coveralls:** Provide cloth full-body coveralls and hats, require that they be worn by all workers in the Work Area. Require that workers change out of coverall in the Equipment Room of the Personnel Decontamination Unit. Dispose of coverall as asbestos waste at completion of all work.

D. **Additional Protective Clothing:** Provide each worker with the protective clothing as required by Federal State and local regulations. This includes, but is not necessary limited by Hardhats, Cold weather gear, Glove, boots and goggles.

E. **Cold Weather Gear:** Provide each worker with an insulated jacket, pants, gloves, and hat. Require that cold weather gear be removed in Equipment Room of Personnel Decontamination Unit. Dispose of cold weather gear as asbestos waste at completion of all work.

F. **Boots:** Provide work boots with non-skid soles, and where required by OSHA, foot protectives, for all workers. Provide boots at no cost to workers. Paint uppers of all boots red with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with ACM. Dispose of boots as asbestos-contaminated waste at the end of the work.

G. **Hard Hats:** Provide head protectives (hard hats) as required by OSHA for all workers, and provide 4 spares for use by Designer, Project Administrator, and Owner. Label hats with same warning labels as used on disposal bags. 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 Work Area at the end of the work.

H. **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. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the work.

I. **Gloves:** Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area and dispose of as asbestos-contaminated waste at the end of the work.

2.2 ADDITIONAL PROTECTIVE EQUIPMENT:

A. Disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Designer, Project Administrator, and other authorized representatives who may inspect the job site. Provide six (6) complete coveralls per day.

PART 3 - EXECUTION

3.1 GENERAL:

A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.

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B. Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coveralls, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.2 DECONTAMINATION PROCEDURES:

A. Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area:

1. Type C Supplied Air or Powered Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area:

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

   b. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:

   c. Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.

   d. With respirator still in place thoroughly wash body, hair, respirator face piece, and

all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.

e. Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.

f. Carefully wash facepiece of respirator inside and out.

2. If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.

a. Shower completely with soap and water.

b. Rinse thoroughly.

c. Rinse shower room walls and floor prior to exit.

d. Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

3. Air Purifying-Negative Pressure Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area with a half or full face cartridge type respirator.

"NOT FOR BIDDING"

a. When exiting area, remove disposable coveralls, disposable headcovers, and disposable footwear covers or boots in the Equipment Room.

b. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator and filters to avoid asbestos fibers while showering. The following procedure is required as a minimum:

c. Thoroughly wet body from neck down.

d. Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.

e. Take a deep breath, hold it and/or exhale slowly, complete wetting of hair, thoroughly wetting face, respirator and filter (air purifying respirator). While still holding breath, remove respirator and hold it away from face before starting to breath.

f. Dispose of wet filters from air purifying respirator.

g. Carefully wash facepiece of respirator inside and out.

h. Shower completely with soap and water.

i. Rinse thoroughly.

j. Rinse shower room walls and floor prior to exit.

k. Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

B. **Remote Shower:** The procedures above are to be used if the decontamination facility is used as a remote shower. If a worker cannot gain direct access to the Equipment Room require that he enter Decontamination Unit and proceed directly through Shower Room to Equipment Room. Decontamination procedure is then completed as required above.

C. **Within Work Area:**

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

3.3 CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT:

Following this section is a Certificate of Worker Training. After each worker has been included in the Contractor's Respiratory Protection Program, completed the training program and medical examination, secure a fully executed copy of this form.

END OF SECTION - 01560 "NOT FOR BIDDING"

SECTION 01561 - WORKER PROTECTION-REPAIR AND MAINTENANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **This section describes** the equipment and procedures for protecting workers against asbestos contamination and other workplace hazards, except for respiratory protection, where asbestos fibers are collected at the point of generation so that contamination of workers is unlikely.

B. **This section applies** only where the airborne fiber counts as measured in accordance with 29 CFR 1926.1101 are below 0.1 fibers per cubic centimeter for an 8 hour Time Weighted Average (TWA) and the excursion limit of 1.0 f/cc.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. **Respiratory Protection:** is specified in Section 01562.

B. **Worker Protection:** for asbestos abatement work where workers will be in areas that contain or may contain airborne fiber counts measured in accordance with 29 CFR 1926 above 0.1 fibers per cubic centimeter for an 8 hour Time Weighted Average (TWA) or above 1.0 fibers per cubic centimeter for a 30 minute Excursion Limit (EL) is specified in Section 01560.

"NOT FOR BIDDING"

1.4 DESCRIPTION OF REQUIREMENTS:

A. **Worker protection requirements** of this section are appropriate for asbestos maintenance and repair work. This differs from asbestos abatement in that the work is not performed in an asbestos-fiber-contaminated area. As such, the worker decontamination procedures are carried out with a HEPA-filtered vacuum cleaner rather than a shower facility.

B. **Requirements** of this section apply only when work is being performed in accordance with the limitations and requirements of the following sections of this specification:

1. 01527 Regulated Areas
2. 01528 Entry Into Controlled Areas
3. 01529 Mini Enclosures and Glovebags for glovebag work.
4. 01712 Cleaning and Decontamination Procedures
5. 02083 Disturbance of ACM During O&M Work
6. 15254 Repair of Insulation and Lagging

C. **When the work** being performed is governed under any other specification section orrequired by any of the above sections or during work in a mini-enclosure the requirements of Section 01560 Worker Protection - Asbestos Abatement apply.

1.5 WORKER TRAINING:

A. **AHERA Accreditation:** All workers are to be accredited as required by the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

B. **State and Local License:** All workers are to be trained, certified, accredited, or licensed as required by state or local code or regulation.

C. **Training:** Provide training in accordance with 29 CFR 1926.1101 for all workers that is the equivalent in curriculum and training method to that of the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers. [40 CFR 763.92(a)(2)]. Provide training that includes "hands-on" training in the use of respiratory protection and work practices and shall take at least 16 hours.

D. **Training:** Provide training for all workers that is the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

1.6 MEDICAL EXAMINATIONS:

A. **Provide a medical surveillance program** for all employees who are engaged in Class I, II and III work for a combined total of 30 or more days per year or are exposed at or above the permissible exposure limit or excursion limit. A medical exam also is required before an employee can be assigned to work requiring the use of a respirator.

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1. For the purposes of this paragraph, any day in which a worker engages in Class II or Class III work or a combination thereof for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in the OSHA standard (29 CFR 1926.1101) is not counted.

B. **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).

C. **Provide medical examination** that as a minimum meets OSHA requirements as set forth in29 CFR 1926.1101. 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.

1.7 SUBMITTALS:

A. **Before Start of Work:** Submit the following to the Designer for review. Do not start work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. **AHERA Accreditation:** Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the EPA Interim Final Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

2. **State and Local License:** Submit evidence that all workers have been trained, certified, accredited or licensed as required by state or local code or regulation.

3. **Historic Airborne Fiber Data:** Submit airborne asbestos fiber count data from an independent air monitoring firm to verify that work procedures will result in an airborne fiber level as measured in accordance with 29 CFR 1926 below 0.1 fibers per cubic centimeter as an 8 hour Time Weighted Average (TWA). Include at least the following data for each procedure required by the work:

   a. Date of measurements
   b. Operation monitored
   c. Sampling and analytical methods used and evidence of their accuracy
   d. Number, duration, and results of samples taken

4. **Certificate Worker Acknowledgment:** Submit an original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or enter the Work Area.

5. **Training Program:** Submit a course outline of the worker training course. Include date and time course was given, name and title of teacher and attendance sheet listing all attendees of the course. Submittal shall be in the form of a letter signed and dated by the course teacher.

6. **Report from Medical Examination:** Conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:

   a. Name and Social Security Number
   b. The physician's written opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos;

   c. Any recommended limitations on the employee or on the use of personal protective equipment such as respirators; and
   d. A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
   e. A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.
   f. A legible typed version of the physician's name, the physician's signature, and date of examination.

7. **Notarized Certifications:** Submit certification signed by an officer of the abatement contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.

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PART 2 - EQUIPMENT

2.1 PROTECTIVE CLOTHING:

A. **General.** Provide and require the use of protective clothing, such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit prescribed by 29 CFR 1926.1101 or for which a required negative exposure assessment is not produced, and for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet (7.5 linear meters or 3 square meters) of TSI or surfacing ACM or PACM.

B. **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.

C. **Coveralls:** Provide cloth full-body coveralls and hats, require that they be worn by all workers in the Work Area. Require that workers change out of coverall in the Equipment Room of the Personnel Decontamination Unit. Dispose of coverall as asbestos waste at completion of all work.

D. **Additional Protective Clothing:** Provide each worker with the protective clothing as required by Federal State and local regnlations. This includes, but is not necessary limited by Hardhats, Cold weather gear, Glove, boots and goggles.

E. **Cold Weather Gear:** Provide each worker with an insulated jacket, pants, gloves, and hat. Require that cold weather gear be removed in Equipment Room of Personnel Decontamination Unit. Dispose of cold weather gear as asbestos waste at completion of all work.

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F. **Boots Covers:** Provide disposable latex boot covers with non-skid soles, and where required, OSHA approved foot protectives, for all workers. Boot covers shall not be worn out of the Work Area or off the sheet plastic drop layer for any reason. Boot covers may be decontaminated, bagged and carried from one Work Area to another.

G. **Hard Hats:** Provide head protectives (hard hats) as required by OSHA for all workers, and provide 4 spares for use by Designer, Project Administrator, and Owner. Label hats with same warning labels as used on disposal bags. 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. Hats shall be thoroughly cleaned and decontaminated before being worn from one Work Area to another. At the end of the work, clean and decontaminate hats and bag for storage in a properly labeled asbestos disposal bag.

H. **Goggles:** Provide eye protectives (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Goggles shall be thoroughly cleaned and decontaminated before being worn from one Work Area to another. At the end of the work, clean and decontaminate goggles and bag for storage in a properly labeled asbestos disposal bag.

I. **Gloves:** Provide work gloves to all workers and require that they be worn at all times in the Work Area Do not remove gloves from Work Area and dispose of as asbestos contaminated waste at the end of the work.

J. **Hearing Protection:** Provide hearing protection as required by OSHA for all workers using noisy equipment or working in noisy environments. Thoroughly clean and decontaminate headset or ear-muff type hearing protectors and reusable ear stopples before they are worn from one Work Area to another or at the end of work. Dispose of disposable ear stopples before leaving work area and provide new ear stopples at each work area.

PART 3 - EXECUTION

3.1 GENERAL:

A. **Work and Decontamination** procedures involve a person in the work area on the plastic sheet and one off the sheet. The person on the sheet carries out the work and never leaves the sheet until the work is complete and dry decontamination procedures are completed. The person off the sheet supplies materials to and accepts material from the on-sheet person. The off sheet person never enters the Work Area. If the work involves more than one person then the team shall consist of two (or more) on-sheet persons and one off-sheet person.

B. **Do not eat, drink, smoke**, chew gum or tobacco, or apply cosmetics in the Work Area. To eat, drink, chew, or smoke, workers shall follow the procedures described below and leave the Work Area.

C. **Provide worker protection** as required by the most stringent OSHA and/or EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.

3.2 AIR MONITORING: "NOT FOR BIDDING"

A. **Monitor Air** as follows at all times that the work is going on:

1. **Personal Air Samples:** Collect a personal air sample on the on-sheet person at all times that work is being carried out. Collect samples at 2 liters per minute for the entire time that work is being carried out. Use cellulose ester filters with 0.8 to 1.2 micron pore size to collect samples.

2. **Area Samples:** Collect one area sample in each secure area during or at completion of the work. Collect a 600 - 3000 liter sample at a maximum pumping rate of 12 liters per minute. Use cellulose ester filters with 0.8 to 1.2 micron to collect samples.

B. **Transmit Samples** to Owner's testing laboratory for analysis. Owner will provide a copy of all air monitoring data to the Contractor.

3.3 RESPIRATORS:

A. **Instruct and train** each worker in proper respirator use and require that each worker always wear a respirator, properly fitted on the face, in the Work Area.

3.4 COVERALLS:

A. **At the Start of Each Work Shift:** Put on new disposable coveralls, new head covers, new

footwear covers over street shoes, and put on a clean respirator.

B. **All workers shall wear** disposable, full-body coveralls and disposable head and footwear covers in the Work Area.

C. **Follow procedures** under "Dry Decontamination" whenever leaving a Work Area.

3.5 ADDITIONAL PROTECTIVE EQUIPMENT:

A. **At the work site** maintain 2 complete sets of protective equipment including disposable coveralls, head covers, and footwear covers for use by the Designer or the Owner.

3.6 DECONTAMINATION PROCEDURES:

A. **Require all Workers** to adhere to the following personal decontamination procedures whenever they leave the Work Area or at end of work shift:

1. **Dry Decontamination:** Complete the following before leaving any Regulated Area.

   a. Each person HEPA vacuum thoroughly the other person. Use brush attachment on the HEPA vacuum.
   b. While still wearing respirator each person removes their paper suit, turning it inside out while removing it. Roll up suit and pack in hood.
   c. Place suits in a disposal bag.
   d. Suck air out of bag with HEPA vacuum.
   e. Twist the bag shut, bend over and seal with duct tape by wrapping around bag neck at least 3 times.

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2. **End Of Shift:** Require that each worker decontaminate according to the following procedure at the end of the days work or before removing respiratory protection.

   a. Each person HEPA vacuum hands, hair, face, and respirator.
   b. Each person HEPA vacuum area of respirator seal to face on the other person.
   c. Remove respirator and, HEPA vacuum face at respirator seal and all surfaces of the respirator. HEPA vacuum any parts of hair or head covered by respirator straps.
   d. If using PAPR, shut down in the following sequence: first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.
   e. Wash respirator face piece inside and outside.
   f. At completion of above, thoroughly wash face and hands with soap and water.
   g. Require that each worker follow the wet decontamination procedures set forth in Section 01560 at the end of each days work before changing into street clothing.

3.7 CERTIFICATE OF WORKER'S ACKNOWLEDGMENT:

A. Following this section is a Certificate of Worker's Acknowledgment. After each worker has been included in the Contractor's Respiratory Protection Program and completed the training program and medical examination, secure a fully executed copy of this form.

END OF SECTION - 01561

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SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **Instruct and train each worker** involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials (ACM) 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 or as required for other toxic or oxygen-deficient situations encountered.

1.3 DEFINITIONS:

A. "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.

B. "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.

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

1.4 STANDARDS:

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

1. **OSHA** - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards Section 29 CFR 1910.1001, Section 1910.134, and Section 29 CFR 1926.1101.
2. **CGA** - Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specifica- tion for Air".
3. **CSA** - Canadian Standard Association, Rexdal, Ontario, Standard Z180.1, "Compressed Breathing Air".
4. **ANSI** - American National Standard Practices for Respiratory Protection, ANSI Z88.2.
5. **NIOSH** - National Institute for Occupational Safety and Health
   - NIOSH Respirator Decision Logic (May 1987) DHHS/NIOSH Publication No. 87-108;

- NIOSH/EPA, "A Guide to Respiratory Protection for the Asbestos Abatement Industry" EPA-560-OPTS-86-001 (September 1986);
- 42 CFR 84, NIOSH Standard for Certification of Non-Powered Air Purifying Respirator filters;
- 30 CFR 11, NIOSH - Certification of Respirators

6. **MSHA** - Mine Safety and Health Administration

1.5 SUBMITTALS:

A. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. **Product Data:** Submit manufacturer's product information for each component used, including NIOSH and MSHA Certifications for each component in an assembly and/or for entire assembly.
2. **System Diagram:** When a supplied air respiratory system is required by the work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in Work Area(s), routing of air lines to Work Area(s) from compressor.
3. **Operating Instruction:** Submit complete operating and maintenance instructions for all components and systems as a whole. Submittal is to be in bound manual form suitable for field use.
4. **Respiratory Protection Program:** Submit Contractor's written respiratory protection program manual as required by OSHA 1926.1101.
5. **Initial Exposure Assessment**: Submit level of respiratory protection intended for each operation required by the project. Base this selection on an "Initial Exposure Assessment" as required by OSHA 29 CFR 1926.1101. Submit information to support this "Initial Exposure Assessment" on the form included at the end of this Section.

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   a. Submit data from exposure monitoring for the PEL and EL from prior asbestos jobs within 12 months;
   b. Submit monitoring and analysis that were performed in compliance with the OSHA asbestos standard in effect;
   c. Submit data that was obtained under workplace conditions "closely resembling" those that will exist during the Work;
   d. Submit data from past asbestos jobs where the type of asbestos abatement and other work, material, control methods, work practices, and environmental conditions closely resemble those that will exist during the Work;
   e. Submit exposure date from prior asbestos jobs where the work that was conducted by employees whose training and experience are no more extensive than that of employees performing the current job;
   f. Based on the exposure data from the previous asbestos jobs, select respiratory protection for the Work that will, to a high degree of certainty, prevent worker exposures (inside the respirator) that exceed the Permissible Exposure Limits (PEL) set forth in this Section of the specifications.
6. **Resume information:** Submit resume and information on training for individual monitoring the operation of supplied air respiratory systems. Submit training certifications where applicable.

1.6 AIR QUALITY FOR SUPPLIED AIR RESPIRATORY SYSTEMS:

A. **Provide air** used for breathing in supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade H or CSA Z180.1 whichever presents the more stringent quality standard:

B. **Provide air** used for breathing in supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade D:

1.7 ALLOWABLE CONTAMINANTS:

A. **Supply air** that has an asbestos concentration no greater than outside ambient conditions.

B. **Supply air** that meets the level of contaminants allowed according to the air quality standard specified.

C. **The following table** sets forth the quantity of any given contaminant allowed according to the referenced standards:

CONTAMINANT	CGA Type 1 (Gaseous Air) Grade D	Grade E	Grade H	CSA Z180.1
Carbon Monoxide, PPM/v	20	10	5	5
Carbon Dioxide, PPM/v	1000	500	500	500
Condensed Hydrocarbons, mg./cu. meter	1	1		1
Gaseous Hydrocarbons - as methane, PPM/v			10	25
Water Vapor - PPM/v dewpoint	(1) -50F	(1) -50F	(1) -50F	27 -63F
Objectionable Odors	None	None	None	None
Nitrogen Dioxide, PPM/v	-	-	0.5	0.2
Nitrous Oxide, PPM/v	-	-	-	5
Sulfur Dioxide, PPM/v	-	-	0.5	-
Halogenated solvents, PPM/v	-	-	1	-
Other gaseous contaminants	-	-	-	(2)
Inorganic particulates, mg./cu. meter	-	-	-	1

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- Indicates that the standard shows no limiting characteristics

(1) The CGA standards do not indicate a specific moisture limit when the ambient temperature is above freezing. However, since a moisture content no greater than a -50 Degrees Fahrenheit (-45.56 Degrees Celsius) dewpoint (66 PPM/v) is necessary for carbon monoxide elimination, the CO limits could not be met unless the air were dried to a -50 Degrees Fahrenheit (-45.56 Degrees Celsius) dewpoint or better.

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

1.8 DELIVERY:

A. **Deliver replacement parts,** etc., not otherwise labeled by NIOSH or MSHA to job site in manufacturer's containers.

PART 2 - EQUIPMENT

2.1 AIR PURIFYING RESPIRATORS

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

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

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

2.2 SUPPLIED AIR RESPIRATOR SYSTEMS:

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

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

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

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

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

F. **Warning device:** Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible above the noise level produced by equipment and work procedures in use, in all parts of the Work Area and at the compressor. Connect alarm to warn of:
   1. Compressor shut down or other fault requiring use of backup air supply
   2. Carbon Monoxide (CO) levels in excess of 5 PPM/V

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

H. **Compressor Shut Down:** Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sound if any of the following occur:
   1. Carbon Monoxide (CO) concentrations exceed 5 PPM/v in the air line between the filter bank and backup air supply
   2. Compressor temperature exceeds normal operating range

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

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

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

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

M. **Self Contained Breathing Apparatus (SCBA):** Configure system to permit the recharging of ½ hour 2260 PSI (15.58 MPa) SCBA cylinders.

PART 3 - EXECUTION

3.1 GENERAL:

A. **Respiratory Protection Program:** Comply with ANSI Z88.2 "Practices for Respiratory Protection" and OSHA 29 CFR 1910.314 and 1926.103.

B. **Require** that respirators be used in the following circumstances:
   1. During all Class I asbestos jobs.
   2. During all Class II work where the ACM is not removed in a substantially intact state,
   3. During all Class II and III work which is not performed using wet methods.
   4. During all Class II and III asbestos jobs where the employer does not produce a "negative exposure assessment".
   5. During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
   6. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
   7. During all work covered by this section where employees are exposed above the OSHA PEL (TWA, or excursion limit).
   8. In emergencies. During emergencies where the airborne asbestos fiber concentration is not known, a self-contained breathing apparatus (SCBA) must be used.

C. **Reqnire** that respiratory protection be used at all times that there is any possibility of disturbance of ACM whether intentional or accidental.

D. **Reqnire** that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Section 01711.

E. **Regardless of Airborne Fiber Levels:** Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.

F. **Do not allow** the use of single-use, disposable, or quarter-face respirators for any purpose.

3.2 FIT TESTING:

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

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

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

3.3 TYPE OF RESPIRATORY PROTECTION REQUIRED:

A. **General:** After reducing airborne asbestos levels to the lowest feasible level with engineering controls and work practices, provide respiratory protection as necessary to ensure that workers are not exposed to an airborne concentration of asbestos in excess of the Specified Permissible Exposure Limits (SPEL) set forth in this Section.

B. **Level of Respiratory Protection:** Determine the proper level of respiratory protection by dividing the expected or actual airborne fiber count in the Work Area by the "protection factors" given below. The level of respiratory protection which supplies an airborne fiber level inside the

respirator, at the breathing zone of the wearer, at or below the Specified Permissible Exposure Limits (PEL)set forth in this Section is the minimum level of protection allowed.

C. **Specific Respiratory Protection Requirements:** Provide respiratory protection as indicated below as a minimum requirement:

1. **Half-face Negative Pressure Air-Purifying Respirators:** Provide half-face negative pressure air-purifying respirators during installation of Critical or Primary Barriers or other activities where there has been an "Initial Exposure Assessment" that has determined that airborne asbestos fiber levels will not exceed 0.1 fiber per cubic centimeter (0.1 f/cc). Provide a PAPR where a half-face negative pressure air-purifying respirator is allowed to any worker who so requests.

2. **Powered Air-Purifying Respirators (PAPR):** Provide powered air-purifying respirators (PAPR) during removal of asbestos-containing thermal system insulation (TSI) or surfacing material where there has been an "Initial Exposure Assessment" that has determined that airborne asbestos fiber levels will not exceed 1.0 fiber per cubic centimeter (1.0 f/cc).

3. **Type "C" Supplied-air respirators:** full facepiece pressure demand supplied air respirators are to be used by all workers engaged in the removal of thermal system insulation (TSI) or surfacing materials, or demolition of pipes, structures, or equipment covered or insulated with asbestos, or in the removal or demolition of asbestos insulation or coverings, or any other activity which results in or may result in airborne asbestos fiber levels above 1.0 fibers per cubic centimeter (1.0 f/cc).

D. **Provide** a full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus for all workers within a regulated area where Class I work is being performed and for which an initial exposure assessment has not been produced. After an initial exposure assessment is made, use the level of respiratory protection required by that assessment and requirements of this specification and the OSHA Asbestos Construction Standard 29 CFR 1926.1101.

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3.4 SPECIFIED PERMISSIBLE EXPOSURE LIMITS (SPEL):

A. **Specified Permissible Exposure Limits (SPEL):** Ensure that no worker is exposed to an airborne concentration of asbestos in excess of the Time-Weighted Average (TWA) limit , and Excursion Limit (EL) set forth below.

1. **Time Weighted Average (TWA) limit** - Concentration of airborne asbestos fibers to which any worker may be exposed as an eight (8) hour time-weighted average (TWA) shall not exceed the following.
   a. 0.1 fibers per cubic centimeter

   b. 0.01 fibers per cubic centimeter

2. **Excursion Limit (EL)** - Concentration of airborne asbestos fibers to which any worker may be exposed as averaged over a sampling period of thirty (30) minutes shall not exceed the following.

   a. 1.0 fibers per cubic centimeter

B. **Fibers:** For purposes of this section, fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), or NIOSH 7400 procedure.

1. Electron Microscopy: If Electron Microscopy is used to determine airborne fiber levels, only asbestos fibers will be enumerated, but fibers of any size detected by the testing of Section 01711 Project Decontamination will be counted.

3.5 RESPIRATORY PROTECTION FACTOR:

A. Respirator Type	Protection Factor
1. **Air purifying:** Negative pressure respirator High efficiency filter Half facepiece	10
2. **Air purifying:** Negative pressure respirator High efficiency filter Full facepiece	50
3. **Powered Air Purifying (PAPR):** Positive pressure respirator High efficiency filter Half facepiece	50
4. **Powered air purifying respirator** equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode. Full facepiece	100
5. **Supplied air:** Positive pressure respirator Pressure demand or other positive pressure mode Full facepiece Equipped with an auxiliary HEPA cartridge or positive pressure Self-contained breathing apparatus (SCBA) for escape	1,000

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3.6 AIR PURIFYING RESPIRATORS:

A. **Negative pressure - half or full face mask:** Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the work day. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the Work Area. Require that new filters be installed each time a worker re-enters the Work Area. Store respirators

and filters at the job site in the changing room and protect totally from exposure to asbestos prior to their use.

B. **Powered air purifying - half or full face mask:** Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the facepiece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a worker leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

3.7 SUPPLIED AIR RESPIRATOR:

A. **Air Systems Monitor:** Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation. Assign an individual, trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring. Assign no other duties to this individual which will take him away from monitoring the air system.

END OF SECTION - 01562

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Project No:_____ Date:_____
Project Name:_____
Facility:_____
Work Area(s):_____
Reference Job:_____
Description of Work:_____

Asbestos Containing Materials	Asbestos/Type Percentage

Task	Personal Monitoring Level High	Low	Average	Respirator Worn	Comments
Prep / Set up					
Removal of Surface Trt					
Removal of TSI					
Removal of Misc Mat.					
Bag Out					
Clean Up					
Other					

Experience Level of Work Force _____

Reference Job:_____
Description of Work:_____

Asbestos Containing Materials	Asbestos/Type Percentage

Task	Personal Monitoring Level High	Low	Average	Respirator Worn	Comments
Prep / Set up					
Removal of Surface Trt					
Removal of TSI					
Removal of Misc Mat.					
Bag Out					
Clean Up					
Other					

Experience Level of Work Force _____

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Expected Conditions of This Job

Task	Anticipated Level	Respirator	Comments
Prep / Set up	f/cc		
Removal of Surface Trt	f/cc		
Removal of TSI	f/cc		
Removal of Misc Mat.	___ f/cc		
Bag Out	f/cc		
Clean Up	f/cc		
Other	f/cc		

Experience Level of Work Force _____

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01563 - DECONTAMINATION UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **Provide separate Personnel and Eqnipment Decontamination facilities**. 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.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. **Refer to Section 01503 Temporary Facilities** - Asbestos Abatement for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical.

1.4 SUBMITTALS

A. **Before the Start of Work:** Submit the following to the Designer for review. Do not begin work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

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1. Personnel Decontamination Unit: Provide shop drawing showing location and assembly of personnel decontamination units.
2. Equipment Decontamination Unit: Provide shop drawing showing location and assembly of equipment decontamination units.
3. Shower Pan: Provide shop drawing.
4. Shower Walls: Provide product data.
5. Shower Head and Controls: Provide product data.
6. Filters: Provide product data and shop drawing of installation on decontamination unit.
7. Hose Bib: Provide product data.
8. Shower Stall: for Wash Down Station provide product data and shop drawing showing and modifications.
9. Elastomeric membrane: Provide product data.
10. Lumber: Provide product data on fire resistance treatment.
11. Sump Pump: Provide product data.
12. Signs: Submit samples of signs to be used.

PART 2 - PRODUCTS

2.1 MATERIALS

A. **Polyethylene Sheet:** A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil (0.15 mm) thick , clear, frosted, or black as indicated.

B. **Polyethylene Sheet:** Provide 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, 6.0 mil (0.15 mm) thick , frosted or black as indicated.

C. **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, 6.0 mil (0.15 mm) thick , frosted or black as indicated.

D. **Duct Tape:** Provide duct tape in 2 inch or 3 inch (51mm or 76 mm) widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

E. **Spray Adhesive:** Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

F. **Shower Pan:** Provide one piece waterproof shower pan 4 feet x 8 feet x 6 inches deep (102 mm X 204 mm x 152 mm deep). Fabricate from seamless fiberglass minimum 1/16 inch (1.59mm) thick reinforced with wood, 18 ga. stainless or galvanized steel with welded seems, copper or lead with soldered seams, or a seamless liner of minimum 60 mil (1.5 mm) thick elastomeric membrane.

G. **Shower Walls:** Provide 8 feet (2.44 m) long by approximately 7 feet (2.13 m) high walls fabricated from rigid, impervious, waterproof material, either corrugated fiberglass roofing or equivalent. Structurally support as necessary for stability.

H. **Shower Head and Controls:** Provide a factory made shower head producing a spray of water which can be adjusted for spray size and intensity. 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.

"NOT FOR BIDDING"

I. **Filters:** Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.

1. Primary Filter - Passes particles 20 microns and smaller
2. Secondary Filter - Passes particles 5 microns and smaller

J. **Hose Bib:** Provide heavy bronze angle type with wheel handle, vacuum breaker, and 3/4 inch (19.05 mm) National Standard male hose outlet.

K. **Shower Stall:** For Wash Down Station provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3 feet x 3 feet (0.91m x 0.91 m) square with minimum 6 feet (1.83 m) high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4 feet (1.22 m) above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib.

L. **Elastomeric membranc:** Provide uniform flat sheets of flexible sheet roofing material fabricated from EPDM (ethylene propylene diene monomers) or Neoprene (polychloroprene), in a nominal 45 mil (1.14 mm) thickness.

M. **Lumber:** Provide kiln dried lumber of any grade or species.

N. **Sump Pump:** Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pnmping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3 inch (76 mm) remains between top of liquid and top of sump pan.

PART 3 - EXECUTION

3.1 PERSONNEL DECONTAMINATION UNIT:

A. **Provide a Personnel Decontamination Unit** consisting of a serial arrangement of connected rooms or spaces, Changing Room, Drying Room, Shower Room, Equipment Room. Reqnire 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 (1076 lumens / sq meter).

B. **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.

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1. Construct using polyethylene sheeting, at least 6 mil (0.15 mm) in thickness, to provide an airtight seal between the Changing Room and the rest of the building.
2. Locate so that access to Work Area from Changing Room is through Shower Room.
3. Separate Changing Room from the building by a sheet plastic flapped doorway.
4. Require workers to remove all street clothes in this room, dress in clean, disposable coveralls, and don 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 from the showers.
5. An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workers may enter the Changing Room directly from the Shower Room. Protect all surfaces of room with sheet plastic as set forth in Section 01526 Temporary Enclosures. Authorization for this must be obtained from the Designer in writing prior to start of construction. Submit written request in accordance with Section 01632 "Substitutions" detailing layout and protective measures proposed.
6. Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room.
7. Damp wipe all surfaces twice after each shift change with a disinfectant solution.
8. Provide posted information for all emergency phone numbers and procedures.
9. Provide 1 storage locker per employee.
10. Provide all other components indicated on the contract drawings.

C. **Airlock:** Provide an airlock between Drying Room and Changing Room. This is a transitarea for workers.

1. Separate this room from Drying Room and Changing Room by sheet plastic flapped doorways.

2. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate this room from the Drying and Changing Rooms with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

D. **Drying Room:** Provide a drying room as an airlock and a place for workers to dry after showering.

1. Construct room by providing a pan continuous with or draining to Shower Room pan. Install a freely draining wooden or non-skid metal floor in pan at elevation of top of pan.

2. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate this room from the Changing Room and Shower Room with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

4. Separate from Changing Room by a sheet plastic flapped doorway.

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

6. Provide a rigid, light sealing hinged door between Drying Room and Clean Room. Arrange so that there is a sensible movement of air from clean room through breathing zone of worker in Shower and Drying Room toward Equipment Room.

"NOT FOR BIDDING"

E. **Shower Room:** Provide a completely watertight 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 after undressing in the Equipment Room.

1. Construct room by providing a shower pan and 2 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.

2. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate this room from the Drying Room and Airlock with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

4. Provide splashproof entrances to Drying Room and Airlock with doors arranged in the following configuration:

   a. At each entrance to the Shower Room construct a door frame out of nominal 2 inch x 4 inch (51 mm X 102 mm) lumber with 1-1/2 inch (39 mm) jambs (sides) and 1-1/2 inch (39 mm) head (top) and sill (bottom). Attach to this door frame two overlapping flaps of elastomeric membrane material, fastened at the head (top) and jambs (sides) (by clamping between a 1-1/2 inch (39 mm) x 3/4 inch (19mm) batten

and frame). Overlap the flaps a minimum of 6 inch (152 mm) in a direction that presents a shingle-like configuration to the water stream from the shower. Overlap sill (bottom) by 1-1/2 inch (39 mm) minimum. Arrange so that any air movement out of the Work Area will cause the flaps to seal against the door frame.

5. Provide shower head and controls.

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

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

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

9. Arrange water 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.

10. Provide flexible hose shower head.

11. Pump waste water to drain or to storage for use in amended water. 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.

12. Provide hose bib.

"NOT FOR BIDDING"

13. Provide all other items indicated on contract drawings.

F. **Airlock:** Provide an airlock between Shower Room and Equipment Room. This is a transit area for workers. Separate this room from Equipment Room by a sheet plastic flap doorway.

1. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

2. Separate this room from the Equipment Room and Shower Room with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate from Equipment Room by a sheet plastic flapped doorway.

G. **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.

1. Separate this room from the Work Area by a 6 mil (0.15 mm) polyethylene flapped doorway.

2. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate this room from the Shower Room and Work Area with airtight walls fabricated

of 6 mil (0.15 mm) polyethylene.

4. Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every shift change expected. Roll drop cloth layer of plastic from Equipment Room into WorkArea after each shift change. Replace before next shift change. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

H. **Airlock:** Provide an airlock between Equipment Room and Work Area. This is a transit area for workers.

1. Separate this room from Equipment Room and Work Area by a sheet plastic flapped doorways.

2. Separate this room from the rest of the building with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

3. Separate this room from the Equipment Room and Work Area with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

I. **Work Area:** Separate Work Area from the Equipment Room by polyethylene 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 (0.15 mm) polyethylene per shift change and remove contaminated layer after each shift.

J. **Decontamination Sequence:** Require that all workers adhere to the following sequence when entering or leaving the Work Area.

"NOT FOR BIDDING"

1. Entering Work Area: Worker enters Changing Room and removes street clothing, puts on clean disposable overalls 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 are put on in the Equipment Room.

3. Worker proceeds to Work Area.

K. **Exiting Work Area:**

1. Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet.

2. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.

3. Extra work clothing such as boots, hard hats, goggles, gloves are to be stored in contaminated end of the Equipment Room.

4. Disposable coveralls are placed in a bag for disposal with other material.

5. Require that Decontamination procedures found in Section 01560 be followed by all

individuals leaving the Work Area.

6. After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

3.2 EQUIPMENT DECONTAMINATION UNIT:

A. **Provide an Equipment Decontamination Unit** 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. **Arrange with airlocks** between rooms as required below.

C. **Wash Down Station:** Provide an enclosed Shower Unit located in Work Area just outside Wash Room as an equipment, bag and container cleaning station.

1. Fabricate waterproof floor extending 6 feet (1.83 m) beyond Wash Down station in all directions. Install seamless waterproof membrane over area and extend over curbs on all four sides. Form curbs from 2 inch x 4 inch (51 X 102 mm) lumber laid on the flat.

2. Waterproof membrane is to be fabricated from elastomeric membrane.

3. Waterproof membrane is to be fabricated from minimum 10 mil (.254 mm) polyethylene.

4. Do not allow water to collect on waterproof membrane. Remove continuously with a wet vacuum or mops.

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D. **Wash Room:** provide wash room for cleaning of bagged or containerized asbestos-containing waste materials passed from the Work Area.

1. Construct wash room of nominal 2 inch x 4 inch (51 X 102 mm) wood framing and polyethylene sheeting, at least 6 mil (0.15 mm) in thickness and located so that packaged materials, after being wiped clean, can be passed to the Holding Room.

2. Separate this room from the Work Area by a single flapped door of 6 mil (0.15 mm) polyethylene sheeting.

3. Provide a drop cloth layer of plastic on floor in the Wash Room for every load-out operation. Roll this drop cloth layer of plastic from Wash Room into Work Area after each load-out. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

E. **Airlock:** Provide an airlock between Wash Room and Holding Room. This is a transit area.

1. Separate this room from adjacent spaces by a sheet plastic flapped doorway.

2. Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

F. **Holding Room:** Provide Holding Room as a drop location for bagged asbestos-containing materials passed from the Wash Room. Construct Holding Room of nominal 2 inch x 4 inch (51 X 102 mm) wood framing and polyethylene sheeting, at least 6 mil (0.15 mm) in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room.

1. Separate this room from the adjacent rooms by flapped doors fabricated from 1/16 inch (1.59 mm) +/- thick single ply elastomeric membrane material either EPDM or Neoprene.

2. Separate this room from the adjacent rooms by flap doors fabricated from 6 mil (0.15 mm) sheet plastic.

G. **Airlock:** Provide an airlock between Holding Room and Clean Room. This is a transit area.

1. Separate this room from adjacent spaces by a sheet plastic flap doorway.

2. Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of 6 mil (0.15 mm) polyethylene.

H. **Clean Room:** provide Clean Room to isolate the Holding Room from the building exterior. If possible locate to provide direct access to the Holding Room from the building exterior.

1. Erect Critical and Primary Barriers as described in Section 01526 "Temporary Enclosures" in an existing space. If no space exists construct Clean Room of 2 x 4 (51 X 102 mm) wood framing and polyethylene sheeting, at least 6 mil (0.15 mm) in thickness.

2. Separate this room from the exterior by a single flap door of 6 mil (0.15 mm) polyethylene sheeting.

"NOT FOR BIDDING"

I. **Load-out Area:** The load-out area is the transfer area from the building to a truck or dumpster. It may be the Clean Room of the Equipment Decontamination unit or a separate room or loading dock area. Erect Critical and Primary barriers as described in Section 01526 "Temporary Enclosures" in load-out area.

1. During transfer of material from load-out area erect primary barriers as described in Section 01526 "Temporary Enclosures" as necessary to seal path from load-out area to truck or dumpster.

J. **Decontamination Sequence:** 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 washroom, 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 remove decontaminated equipment and/or containers for disposal.

6. Require these workers to wear full protective clothing and appropriate respiratory protection.

7. At no time is a worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

3.3 CONSTRUCTION OF THE DECONTAMINATION UNITS:

A. **Walls and Ceiling:** Construct airtight walls and ceiling using polyethylene sheeting, at least 6 mil (0.15 mm) in thickness. Attach to existing building components or a temporary framework.

B. **Floors:** Use 2 layers (minimum) of 6 mil (0.15 mm) polyethylene sheeting to cover floors in all areas of the Decontamination Units. Use only clear plastic to cover floors.

C. **Flap Doors:** Fabricated from three (3) overlapping sheets with openings a minimum of three feet (3') (0.91 meters) wide. Configure so that sheeting overlaps adjacent surfaces. Weights at bottom of sheets as required so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of six feet (6') (1.22 meters) between entrance and exit of any room. Provide a minimum of three feet (3') (0.91 meters) between doors to airlocks.

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D. **If the Decontamination area** is located within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the area with a minimum 1/4 inch (6.4 mm) hardboard or 1/2 inch (12.7 mm) plywood "ceiling" with polyethylene sheeting, at least 6 mil (0.15 mm) in thickness covering the top of the "ceiling".

E. **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 (0.15 mm) 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 1/4 inch (6.4 mm) thick hardboard or 1/2 inch (12.7 mm) plywood. Where the solid barrier is provided, sheeting need not be opaque.

F. **Alternate methods** of providing Decontamination facilities may be submitted to the Designer for approval. Do not proceed with any such method(s) without written authorization of the Designer.

G. **Electrical:** Provide subpanel at Changing Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel.

1. Connect all electrical branch circuits in Decontamination unit and particularly any pumps in shower room to a ground-fault circuit protection device.

3.4 CLEANING OF DECONTAMINATION UNITS:

A. **Clean debris and residue** from inside of Decontamination Units on a daily basis or as otherwise indicated on Contract Drawings. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

B. **If the Changing Room** of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire Decontamination Unit and erect a new Decontamination Unit. Use the former Changing Room as an inner section of the new Equipment Room.

3.5 SIGNS:

A. **Post** an approximately 20 inch by 14 inch (508 mm x 356 mm) manufactured caution 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:

1. Provide signs in both English and Spanish.
2. Legend:
   DANGER
   ASBESTOS
   CANCER AND LUNG DISEASE HAZARD

   AUTHORIZED PERSONNEL ONLY

   RESPIRATORS AND PROTECTIVE CLOTHING
   ARE REQUIRED IN THIS AREA

"NOT FOR BIDDING"

3. Provide spacing between respective lines at least equal to the height of the respective upper line.

B. **Post** an approximately 10 inch by 14 (254 mm x 356 mm) inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:

1. Provide signs in both English and Spanish.
2. **Legend** — **Notation**

Legend	Notation
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4 inch (19 mm) Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE WORK AREA	3/4 inch (19 mm) Block
ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK AREA AND BEFORE ENTERING THE CHANGING AREA	3/4 inch (19 mm) Block

END OF SECTION - 01563

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01601 - MATERIALS AND EQUIPMENT - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

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

1. The Contractor's Construction Schedule is included under Section 01043 Coordination - Asbestos Abatement.
2. The Contractor's Schedule of Submittals is included under Section 01301 Submittals - Asbestos Abatement.
3. The applicability of industry standards to products specified is included under Section 01097 Reference Standards and Definitions - Asbestos Abatement.
4. The administrative procedures for handling requests for substitutions made after award of the Contract is included under Section 01632 Substitutions - Asbestos Abatement.

1.3 DEFINITIONS

"NOT FOR BIDDING"

A. **Definitions** used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
2. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
3. "Foreign Products" as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.
4. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
5. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.
6. "Equipment" are products that may be either operational or fixed.

a. Operational Equipment are products with operating parts, whether motorized or manually operated, that requires temporary or permanent service connections, such as wiring or piping.

b. Fixed Equipment are products necessary for accomplishing the work that are used as a temporary facility during the work and removed afterward.

1.4 SUBMITTALS

Required submittals: A general listing of products requiring submittals is included at the end of Section 01301 "Submittals." This listing may not be complete. Submittal requirements are found in each specification section. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.

A. **Product List:** A list of products required is included at the end of this Section. Prepare a schedule in tabular form showing each product listed. Include the mauufacturer's name and proprietary product names for each item listed.

B. **Product List:** Prepare a list showing products specified in tabular form acceptable to the Owner's representative. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.

2. Form: Prepare product list with information on each item tabulated under the following column headings:

"NOT FOR BIDDING"

a. Related Specification Section number.
b. Generic name used in Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.

3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

   a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

5. Designer's Action: The Designer will respond in writing to Contractor within 2 weeks of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Owner's representative's

response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Owner's representative to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. The contractor is responsible for providing products and construction methods that are compatible with products and construction methods to be installed after completion of the work of this contract.

2. If a dispute arises between contractors over concurrently selectable, but incompatible products, the Designer will determine which products shall be retained and which are incompatible and must be replaced.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:

"NOT FOR BIDDING"

1. No available domestic product complies with the Contract Documents.

2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

"NOT FOR BIDDING"

A. **General Product Requirements:** Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. **Product Selection Procedures:** The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.

   a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

   a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Designer's decision will be final on whether a proposed product matches satisfactorily.

   a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

"NOT FOR BIDDING"

8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Designer will select the color, pattern, and texture from the product line selected.

9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. **Comply with manufacturer's instructions and recommendations** for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01601

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SECTION 01632 - SUBSTITUTIONS - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. **This Section includes** administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

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

1. **Division 1 Section "Reference Standards and Definitions - Asbestos Abatement"** specifies the applicability of industry standards to products specified.

2. **Division 1 Section "Coordination - Asbestos Abatement"** specifies requirements for submitting the Contractor's Construction Schedule.

3. **Division 1 Section "Submittals - Asbestos Abatement"** specifies requirements for submitting the Submittal Schedule.

4. **Division 1 Section "Materials and Equipment - Asbestos Abatement"** specifies requirements governing the Contractor's selection of products and product options.

"NOT FOR BIDDING"

1.3 DEFINITIONS

A. **Definitions** in this Article do not change or modify the meaning of other terms used in the Contract Documents.

B. **Substitutions:** Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:

1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
2. Revisions to the Contract Documents requested by the Owner or Designer.
3. Specified options of products and construction methods included in the Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. **Substitution Request Submittal:** The Designer will consider requests for substitution if received within 60 days after commencement of the Work. Requests received more than

60 days after commencement of the Work may be considered or rejected at the discretion of the Designer.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
   a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.
   b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
   c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
   d. Samples, where applicable or requested.
   e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
   f. Cost information, including a proposal of the net change, if any in the Contract Sum.
   g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
   h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

"NOT FOR BIDDING"

4. Designer's Action: If necessary, the Designer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Designer will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.
   a. Use the product specified if the Designer cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. **Conditions:** The Designer will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Designer. If the following conditions are not satisfied, the Designer will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of the Contract Documents.

3. The request is timely, fully documented, and properly submitted.
4. The specified product or method of construction cannot be provided within the Contract Time.
5. The Designer will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
7. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Designer for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
8. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
9. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
10. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
11. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

B. **The Contractor's submittal and the Designer's acceptance of Shop Drawings**, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

"NOT FOR BIDDING"

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01632

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SECTION 01701 - CONTRACT CLOSEOUT - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. **This Section includes** administrative and procedural requirements for contract closeout including, but not limited to, the following:
1. Inspection procedures.
2. Project record document submittal.
3. Submittal of warranties.
4. Final cleaning.

B. **Closeout requirements** for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.3 SUBSTANTIAL COMPLETION

A. **Preliminary Procedures:** Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

"NOT FOR BIDDING"

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
   a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
   b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
2. Advise the Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.

8. Complete final cleanup requirements, including touch up painting.
9. Touch up and otherwise repair and restore marred, exposed finishes.

B. **Inspection Procedures:** On receipt of a request for inspection, the Designer will either proceed with inspection or advise the Contractor of unfilled requirements. The Designer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Designer will repeat inspection when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. **Preliminary Procedures:** Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Designer's final inspection list of items to be completed or corrected, endorsed and dated by the Designer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Designer.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

"NOT FOR BIDDING"

B. **Reinspection Procedure:** The Designer will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Designer.

1. Upon completion of reinspection, the Designer will prepare a certificate of final acceptance. If the Work is incomplete, the Designer will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. **General:** Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Designer's reference during normal working hours.

B. **Record Drawings:** Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
3. Note related change-order numbers where applicable.
4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.

C. **Record Specifications:** Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.
4. Upon completion of the Work, submit record Specifications to the Designer for the Owner's records.

"NOT FOR BIDDING"

D. **Record Product Data:** Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.

1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
3. Upon completion of markup, submit complete set of record Product Data to the Designer for the Owner's records.

E. **Miscellaneous Record Submittals:** Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Designer for the Owner's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. **General:** The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls." The cleaning in this Section is in addition to cleaning which is part of decontamination work. This section is intended to return the facility to the Owner in presentable condition.

B. **Cleaning:** Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.

   a. Remove labels that are not permanent labels.
   b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision- obscuring materials.
   c. Replace chipped or broken glass and other damaged transparent materials.
   d. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted snrfaces.
   e. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
   f. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

"NOT FOR BIDDING"

C. **Removal of Protection:** Remove temporary protection and facilities installed for protection of the Work dnring construction.

D. **Compliance:** Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 01701

SECTION 01711 - PROJECT DECONTAMINATION

PART 1 - GENERAL

1.1 SUMMARY:

A. **Work of This Section** includes the decontamination of air in the Work Area which has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials (ACM) in the space.

B. **Work of This Section** includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:

1. Primary and Critical Barriers erected by work of Section 01526
2. Decontamination Unit erected by work of Section 01563
3. Pressure Differential System installed by work of Section 01513

C. **Work of This Section** includes the cleaning, and decontamination of all surfaces (ceiling, walls, floor) of the Work Area, and all furniture or equipment in the Work Area.

1.2 RELATED DOCUMENTS:

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

1.3 DESCRIPTION OF REQUIREMENTS:

"NOT FOR BIDDING"

A. **General:** Decontamination of the Work Area following asbestos abatement.

B. **If the asbestos abatement work is on damaged or friable materials** the work is a four step procedure with two cleanings of the Primary Barrier plastic prior to its removal and two cleanings of the room surfaces to remove any new or existing contamination. Unless specifically indicated otherwise all materials are considered damaged or friable for purposes of this section.

C. **If the asbestos abatement work is on undamaged and non-friable materials** the decontamination procedure is a two step procedure with two cleanings of the Primary Barrier plastic to remove contamination, thus preventing contamination of the building when the Work Area isolation barriers are removed.

D. **In both cases** operation of the pressure differential system is used to remove airborne fibers generated by the abatement work.

1.4 RELATED WORK SPECIFIED ELSEWHERE:

A. **Removal of Gross Debris** is integral with the performance of abatement work and as such is specified in the appropriate work section(s) of these specifications:

1. Section 02081 Removal of Asbestos-Containing Materials
2. Section 02082 Removal of Asbestos-Contaminated Soil
3. Section 09251 Gypsum Drywall - Asbestos Enclosures

4. Section 09805 Encapsulation of Asbestos-Containing Materials

1.5 SUBMITTALS:

A. Before Start of Work submit the following to the Owner's Representative for review. Do not begin work until these submittals are returned with the Owner's Representative's action stamp indicating that the submittal is returned for "Unrestricted Use" or "Final But Restricted Use".

1. Submit test report from an independent testing laboratory on the fire resistance rating of the assembly of the sprayback fireproofing on the lock-back sealer used.

B. Before Start of Work submit the following to the Owner's Representative for review. Do not begin work until these submittals are returned with the Owner's Representative's action stamp indicating that the submittal has been "Received".

1. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance wit the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:

a. "Lock-Back', sealer.

1.6 CLEARANCE AIR SAMPLING BY THE OWNER:

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

"NOT FOR BIDDING"

1. Aggressive sampling procedures as described below will be followed.
2. PCM samples will be secured as indicated below. If the area meets the clearance criteria TEM sampling will proceed. PCM or TEM sampling will be performed depending on quantity of material.
3. The specifications will provide the clearance criteria.
4. Aggressive sampling procedures will be repeated.
3. TEM samples will be secured and analyzed as indicated below.
4. Work Area Clearance: upon meeting the TEM Clearance requirements the work of Section 01711 Project Decontamination can continue.
5. Aggressive sampling procedures as described below will be followed.
6. PCM and TEM samples will be secured as indicated below. PCM samples will be analyzed and TEM samples will be transmitted to the laboratory. If the area meets the clearance criteria by PCM the TEM analysis will proceed.
7. Work Area Clearance: upon meeting the TEM Clearance requirements the work of Section 01711 Project Decontamination can continue.

1.7 AGGRESSIVE SAMPLING BY THE OWNER:

A. All Air Samples will be taken using aggressive sampling techniques as follows:

1. Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower (746 watts) electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 (283 cubic meters) cubic feet of room volume.

2. One 20 inch (508 mm) diameter fan per 10,000 cubic feet (283 cubic meters) of room volume will be mounted in a central location at approximately 6 feet-6 inches (2 meters) above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.
3. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors of vents.
4. After air sampling pumps have been shut off, fans will be shut off.
5. In work areas where a dirt floor or exposed fibrous glass insulation is in the space, but outside the work area, maintain a critical barrier to prevent disturbance of these surfaces during aggressive sampling. Dirt floor crawl spaces will not be tested using Aggressive Techniques.

1.8 SCHEDULE OF CLEARANCE AIR SAMPLES BY OWNER:

A. **Sample cassettes:** Samples will be collected on 25 mm. cassettes with a conductive extension cord as follows:

1. **PCM:** 0.8 micrometer mixed cellulose ester.
2. **TEM:** 0.45 micrometer mixed cellulose ester or 0.40 micrometer polycarbonate, with 5.0 micron mixed cellulose ester backing filter. Laboratory preparation of PCM samples should be such that they may be analyzed by both PCM and TEM methods.

B. **Number and Volume of Samples:** The number and volume of air samples given in the schedules is approximate. The exact number and volume of samples collected by the Owner may vary depending upon job conditions and the analytical method used.

C. **Sampling sensitivity:**

"NOT FOR BIDDING"

1. **PCM:** Based on a limit of detection (LOD) of 7 fibers/mm^2 on the filter (approximately 5 fiber counted in 100 fields) and a 95% confidence limit, a sample volume of sufficient size that a single sample indicates compliance with the limit values given below. A sample must be at or below the LOD to indicate that it is at or below the limit value. Note: This is different from quantifying a concentration which is a stricter requirement and would need a larger sample volume.

   a. Clearance samples - a limit value of 0.01 f/cc.

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

D. PHASE CONTRAST MICROSCOPY:

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

Location Sampled	Number of Samples	Limit Value (Fibers/cc)	Approx. Volume (Liters)	Rate Liters / Minute
Each Work Area or	5	0.01	1,000	10
Each Room of Work Area	1 (5 min.)	0.01	1,000	10
Outside Work Area	2	0.01	1,000	10
Work Area Blank	1	0.01	Open for 30 Seconds	
Laboratory Blank	1	0.01	Do Not Open	

2. **Analysis:** Fibers on each filter will be measured using the NIOSH Method 7400 entitled "Fibers" published in the NIOSH Manual of Analytical Methods, or the OSHA Reference Method (ORM) (29 CFR 1926.1101 Appendix A).
3. **Fibers:** referred to in this section include fibers regardless of composition as counted by the phase contrast microscopy method used.
4. **Split Sample:** One Work Area sample will be split and both halves analyzed separately for duplicate analysis.
5. **Release Criteria:** Decontamination of the work site is complete when every Work Area sample is at or below the Detection Limit above. If any sample is above the Detection Limit then the decontamination is incomplete and proceeding per section 01711 Project Decontamination is required.

"NOT FOR BIDDING"

1.9 TRANSMISSION ELECTRON MICROSCOPY:

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

Location Sampled	Number of Samples	Analytical Sensitivity Struct/cc	Approx. Volume (Liters)	Rate Liters/ Minute
Each Work Area	5	0.005	1,300-1,800	1-10
Outside Each Work Area	5	0.005	1,300-1,800	1-10
Work Area Blank	1	0.005	0	Open for 30 Seconds
Outside Blank	1	0.005	0	Open for 30 Seconds
Laboratory Blank	1	0.005	0	Do Not Open

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

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

D. **Release Criteria:** Decontamination of the work site is complete if either of the following two sets of conditions are met:

1. **Work Area Samples are below filter background levels**

   a. All Work Area sample volumes are greater than 1,199 liters for a 25 mm. sampling cassette.
   b. The average concentration of asbestos of the five Work Area Samples does not exceed the filter background level of 70 structures per square millimeter of filter area.

2. **Work Area Samples are not statistically different from Outside samples**

   a. All sample volumes except for blanks are greater than 560 liters for a 25 mm. sampling cassette.
   b. The average asbestos concentration of the three blanks is below the filter background level of 70 structures per square millimeter of filter area.
   c. Average asbestos concentrations in Work Area Samples are not statistically different from Outside samples, as determined by the Z test calculation found in 40 CFR Part 763, Subpart E, Appendix A (Z-3 less than or equal to 1.65).

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E. **If these conditions are not met** then the decontamination is incomplete, repeat the cleaning procedures of this section.

F. **Termination of Analysis:** if the arithmetic mean (average) asbestos concentration on the blank filters exceed 70 structures per square millimeter of filter area the analysis will cease and new samples collected.

1.10 LABORATORY TESTING BY THE OWNER:

A. **Phase Contrast Microscopy by the Owner:**

1. **The services of a testing laboratory** will be employed by the Owner to perform laboratory analysis of the air samples. A technician will be at the job site, and samples will be sent daily by overnight delivery, so that verbal reports on air samples can be obtained within 24 hours. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the Designer, the Owner and the Contractor.

B. **Transmission Electron Microscopy by the Owner:**

Transmission electron Microscopy services: include verbal results available on weekdays within 24 hours turnaround time after they arrive in the laboratory. Weekend or Holiday analysis is

available on request. Due to the cost differences of each response time, the Owner will determine which turnaround times are requested. Contractor should submit with Bid, unit cost for each day of waiting beyond that set forth here.

1. **Samples will be sent by overnight courier** for analysis by Transmission Electron Microscopy. Samples will not be carried on weekends, so that samples shipped on Friday will arrive on the following Monday. Verbal results will normally be available during the 5th working day after receipt of samples by the laboratory. The laboratory is capable of analyzing a maximum of 13 such samples from this project at any one time. All Transmission Electron Microscopy results will be available to the Contractor.
2. **Submit with bid unit cost** for each day of waiting beyond that set forth in the paragraph above.

1.11 SUBMITTALS:

A. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal is returned for "Unrestricted Use" or "Final But Restricted Use."

1. Submit test report from an independent testing laboratory on the fire resistance rating of the assembly of the sprayback fireproofing on the lock-back sealer used.

B. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal has been' "Received - Not Reviewed."

"NOT FOR BIDDING"

1. Material Safety Data Sheet: Submit Material Safety Data Sheets or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:

   a. "Lock-Back," sealer.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 START OF WORK:

A. **Previous Work:** During completion of the asbestos abatement work specified in other sections, the Secondary Barrier of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.

B. **Visual inspection:** Perform visual inspections of the work area along with the Project Administrator at each step of the decontamination process. Inspection procedures may be utilized from the EPA Purple Book, ASTM 1368 standards, or a combination of the two sources, to be determined by the Owner's Representative to best meet the site conditions.

1. Follow inspection procedures in EPA Purple Book.
2. Follow inspection procedures in the American Society for Testing and Material (ASTM) standard for visual inspections, ASTM E1368.

C. **Start of Work:** Work of this section begins with the cleaning of the Primary Barrier. At start of work the following will be in place:

1. Primary Barrier: Two layers of polyethylene sheeting on floor and one layer on walls and ceiling.
2. Critical Barrier: An airtight barrier of two (2) independent layers of polyethylene sheeting between the Work Area and other portions of the building or the outside.
3. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings.
4. Decontamination Units: For personnel and equipment in operating condition.
5. Pressure Differential System: In operation.

3.2 FIRST CLEANING:

A. **First Cleaning:** Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.) Do not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

1. Remove All Filters in Air Handling System(s) and dispose of as asbestos-containing waste in accordance with requirements of Section 02084 Disposal of Regulated Asbestos-Containing Material.
2. After the surfaces have passed a visual inspection verifying that all debris and residue has been removed from the sheet plastic, allow a waiting period that is long enough for the HEPA-filtered fan units operating in the work area to provide 96 air changes to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain Pressure Differential System in operation for the entire 96 air change period.

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3.3 VISUAL INSPECTION:

A. After First Cleaning Perform a Complete Visual Inspection of the entire Work Area including: all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any source, residue on surfaces, dust or other matter. During visual inspection sweep entire work area including walls, ceilings, ledges, floors, and other surfaces in the room with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). If any debris, residue, dust or other matter is found repeat final cleaning and continue decontamination procedure from that point. When the area is visually clean, and if after sweeping of all surfaces with leaf blower, no debris, residue, dust or other material is found, complete the certification at the end of this section. Visual inspection is not complete until confirmed in writing, on the certification, by Project Administrator.

3.3 SECOND CLEANING:

A. **Second Cleaning:** Carry out a second cleaning of all surfaces in the work area in the same manner as the first cleaning.

B. **Visual inspection:** Before the application of any sealer to abated surfaces as a lock-back, perform a visual inspection to determine if all ACM including debris and residue has been removed. Perform visual inspections along with Project Administrator. When the area is visually clean, and if after sweeping of all surfaces with leaf blower, no debris, residue, dust or other material is found, complete the certification at the end of this section. Visual inspection is not complete until confirmed in writing, on the certification, by Project Administrator. After this visual inspection is passed, lock-back sealants can be applied and the work area decontamination process can be initiated.

C. **Sealing of substrate:** Perform sealing of substrate or installation of spray-applied finishes or fireproofing, where required, at this time. Maintain Pressure Differential System in operation during encapsulation work. Perform work only after meeting the following requirements:

1. Surfaces to be covered with sealer have met the requirements for a visual inspection in this section.
2. Airborne fiber counts in the Work Area are at or below 0.01 fibers per cubic centimeter as measured by phase contrast microscopy.

D. **Removal of Primary Barriers:**

1. Immediately following the second cleaning of the Primary plastic, remove all Primary Barrier sheeting and Material Decontamination Unit, if there is one, leaving only:

   a. Critical Barrier: Which forms the sole barrier between the Work Area and other portions of the building or the outside.
   b. Critical Barrier Sheeting: Over lighting fixtures and blocks, ventilation openings, doorways, convectors, speakers, and other openings.
   c. Decontamination Unit: For personnel, in operating condition.
   d. Pressure Differential System: Maintain in continuous operation.

"NOT FOR BIDDING"

3.4 THIRD CLEANING:

A. **Third cleaning:** Carry out a third cleaning of all surfaces in the work area in the same manner as the first cleaning immediately after removal of Primary plastic. This cleaning is now being applied to existing room surfaces. Take care to avoid water marks or other damage to surfaces.

B. **Contractor's Testing:** At the completion of the above cleaning visually inspect all surfaces. Reclean if any dust, debris, etc. is found. At completion of this inspection sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced-air equipment (leaf blower with approximately 1 horsepower (745.7 watts) electric motor or equivalent). Do not direct forced-air equipment at any seal in any Critical Barrier. If any debris or dust is found repeat the cleaning. Continue this process until no debris dust or other material is found while sweeping of all surfaces with forced-air equipment.

1. Cover carpeting in the work area with 6 mil (0.15 mm) polyethylene during Contractor's testing procedures. Seal plastic to baseboards with duct tape.

C. **Cleaning Carpeting:** At the completion of cleaning of all surfaces except carpeting, HEPA vacuum carpeting designated to remain in Work Areas using a floor cleaning attachment adjusted so that rubber skirting is in contact with carpet surface. Use a passive (non-power brush type) floor attachment with rubber floor seals and adjustable above-floor height. Completely clean

carpeting in one direction with each pass of the floor attachment overlapping the previous pass by one-half the attachment width. At the completion of one such cleaning, vacuum clean in the same manner in a direction at right angles to the initial cleaning. Perform a visual inspection of the carpet at the completion of cleaning, in accordance with inspection standards of the American Society for Testing and Material (ASTM) standard for visual inspections, ASTM E1368.

D. After a visual inspection, again wait for a period of time long enough for the HEPA-filtered fan units operating in the work area to provide 96 air changes to allow HEPA filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain pressure differential system in operation for the entire 96 air change period.

3.5 FINAL CLEANING:

A. **Final Cleaning:** Carry out a final cleaning of all surfaces in the Work Area in the same manner as the previous cleaning.

B. **Contractor's Testing:** At the completion of the above cleaning visually inspect all surfaces. Reclean if any dust, debris, etc. is found. At completion of this inspection sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). Do not direct forced air equipment at any seal in any critical barrier. If any debris or dust is found repeat the final cleaning. Continue this process until no debris dust or other material is found while sweeping of all surfaces with forced air equipment.

C. After a visual inspection, again wait for a period of time long enough for the HEPA-filtered fan units operating in the work area to provide 96 air change to allow HEPA filtered fan units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of Work Areas during this period. Maintain Pressure Differential System in operation for the entire 96 air change period.

"NOT FOR BIDDING"

3.6 VISUAL INSPECTION:

A. **After Final Cleaning Perform a Complete Visual Inspection** of the entire Work Area including: all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any source, residue on surfaces, dust or other matter. During visual inspection sweep entire work area including walls, ceilings, ledges, floors, and other surfaces in the room with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent). If any debris, residue, dust or other matter is found repeat final cleaning and continue decontamination procedure from that point. When the area is visually clean, and if after sweeping of all surfaces with leaf blower, no debris, residue, dust or other material is found, complete the certification at the end of this section. Visual inspection is not complete until confirmed in writing, on the certification, by Project Administrator.

B. **Temporary lighting:** Provide a minimum of 100 foot candles (1075 Lumens / sq meter) of lighting on all surfaces in the areas to be subjected to visual inspection. Provide hand held lights providing 150 foot candles (1600 lumens / sq meter) at 4 feet (1.25 meter) capable of reaching all locations in work area.

C. **Lifts:** Provide ladders, scaffolding, and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection. Access is to allow touching of all surfaces.

3.7 AGGRESSIVE SAMPLING BY THE CONTRACTOR'S REPRESENTATIVE:

A. **All Air Samples** will be taken using aggressive sampling techniques as follows:

1. Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.
2. One 20 inch diameter fan per 10,000 cubic feet of room volume will be mounted in a central location at approximately 6 feet above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.
3. Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors of vents.
4. After air sampling pumps have been shut off, fans will be shut off.
5. In work areas where a dirt floor or exposed fibrous glass insulation is in the space, but outside the work area, maintain a critical barrier to prevent disturbance of these surfaces during aggressive sampling.

3.8 CLEARANCE AIR SAMPLING BY OWNER (TEM):

A. **Phase Contrast Microscopy (PCM):** For removal of quantities of ACM<160 SF or <260 LF, after the Work Area is found to be visually clean, air samples will be taken and analyzed by the Owner's Representative in accordance with the procedure for Phase Contrast Microscopy set forth in Part 1 of this section.

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1. If Release Criteria are not met, repeat Final Cleaning and continue decontamination procedure from that point at no additional cost to the Owner.
2. If Release Criteria are met remove work area isolation in accordance with requirements of this section.

B. After the Work Area is found to be visually clean, air samples will be taken and analyzed by the Owner in accordance with the procedure for Phase Contrast Microscopy set forth in Part 1 of this section.

1. If Release Criteria are not met, repeat Final Cleaning and continue decontamination procedure from that point at no additional cost to the Owner.
2. If Release Criteria are met the Owner will continue with the clearance air testing by Transmission Electron Microscopy.

C. **Transmission Electron Microscopy (TEM):** After the work area is found to be visually clean and PCM air sampling completed, TEM air samples will be collected and analyzed by the Owner in accordance with the procedure for Transmission Electron Microscopy set forth in Part 1 of this section.

1. If Release Criteria are not met, repeat Final Cleaning and continue Decontamination procedure from that point at no additional cost to the Owner.
2. If Release Criteria are met, remove work area isolation in accordance with requirements of this section.

3.9 FINAL AIR SAMPLING BY OWNER (PCM):

A. **Work Area Size Limitation:** PCM without TEM sampling will be used to clear Work Areas where the ACM involved in the work are less than or equal to 160 square feet (15 sq meters), or 260 linear feet (80 linear meters).

B. **Phase Contrast Microscopy (PCM):** After the work area is found to be visually clean, air samples will be taken and analyzed by the Owner in accordance with the procedure for Phase Contrast Microscopy set forth in Part 1 of this section.

1. If Release Criteria are not met, repeat Final Cleaning and continue Decontamination Procedure from that point at no additional cost to the Owner.
2. If Release Criteria are met, proceed to work of this Section on Removal of Work Area Isolation.

3.10 LOCK-BACK (Lock-Down):

A. **Encapsulation of substrate:** Perform encapsulation of substrate or installation of spray-applied finishes or fireproofing, where required, before Removal of Work Area Isolation as specified below. Maintain Pressure Differential System in operation during encapsulation work.

3.11 REMOVAL OF WORK AREA ISOLATION:

A. After all requirements of this section and Section 01714 Work Area Clearance have been met:

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1. Shut down and remove the Pressure Differential System. Seal HEPA filtered fan units, HEPA vacuums and similar equipment with 6 mil (0.15 mm) polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area.
2. Remove Personnel Decontamination Unit.
3. Remove the Critical Barriers separating the Work Area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection. If significant quantities, as determined by the Designer, are found then the entire area affected shall be decontaminated as specified in Section 01712 Cleaning & Decontamination Procedures.
4. Remove all equipment, materials, debris from the work site.
5. Dispose of all asbestos-containing waste material as specified in Section 02084 Disposal of Regulated Asbestos Containing Material.

3.12 SUBSTANTIAL COMPLETION OF ABATEMENT WORK:

A. **Asbestos Abatement Work is Substantially Complete** upon meeting the requirements of this section including submission of:

1. Certificate of Visual Inspection
2. Receipts Documenting proper disposal as required by Section 02084 Disposal of Regulated Asbestos-Containing Material.
3. Punch list detailing repairs to be made and incomplete items.

3.13 CERTIFICATE OF VISUAL INSPECTION:

A. Following this section is a "Certificate of Visual Inspection". This certification is to be completed by the Contractor and certified by the Project Administrator. Submit completed Certificate with Application for Final Payment. Final payment will not be made until this Certification is executed.

END OF SECTION - 01711

"NOT FOR BIDDING"

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

CERTIFICATION OF VISUAL INSPECTION AND ACCEPTANCE INSPECTION

JOB NAME:

WORK AREA:

CONTRACTOR'S SUPERVISOR CERTIFICATION

In accordance with Section 01711 "Project Decontamination" the Contractor hereby certifies that he has visually inspected the Work Area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Units, sheet plastic, etc.) and has found no dust, debris or residue.

By: (Signature)_____ Date:_____

(Printed Name)_____ Firm Name_____

(Print Title)_____

ENVIRONMENTAL FIELD TECHNICIANS CERTIFICATION

The Environmental Field Technician hereby certifies that he has accompanied the contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge, and belief, the contractors certifications above is a true and honest one.

By: (Signature)_____ Date:_____

(Printed Name)_____ Firm Name_____

(Print Title)_____

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PROJECT DESIGNER CERTIFICATION

The Project Designer hereby certifies that he has accompanied the contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge and belief, the contractors certifications above is a true and honest one.

By: (Signature)_____ Date:_____

(Printed Name)_____ Firm Name_____

(Print Title)_____

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

BUILDING OWNER'S CERTIFICATION

The Building Owner or Owner's Representative hereby certifies that he/she has accompanied the project designer on a final walk through inspection, and, to the best of their knowledge, is satisfied that the contractor has fulfilled his contractual obligations. All discrepancies identified at this time have been noted in pre-existing conditions, or post tear down inspections throughout the project.

By: (Signature)_____ Date:_____

(Printed Name)_____

(Print Title)_____

PROJECT ADMINISTRATOR CERTIFICATION

The Project Administrator hereby certifies that he has accompanied the Contractor on the Contractor's visual inspection and verifies that this inspection has been thorough and to the best of their knowledge and belief, the Contractor's Certification above is a true and honest one.

By: (Signature)_____ Date_____

(Print Name)_____

(Print Title)_____

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 01712 - CLEANING AND DECONTAMINATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF THE WORK:

A. **The extent** of cleaning and decontamination work is shown on the drawings.

B. *The work includes the removal of asbestos-containing debris that has fallen from the ceiling in Room no. 115 "Main Reading Room" in the Anthophyllite City Library, 239 Whitedust Drive, Anthophyllite, Anystate. The work includes:*

1. *Removal and disposal of visible debris.*

2. *Decontamination of carpeting in the area of the debris and for 10 feet (3.05 m) beyond any visible debris.*

3. *Removal, cleaning and reshelving of books within the above area.*

C. **The work includes** decontamination of the areas indicated in the "Schedule of Decontamination Work" found at the end of this section.

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1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. **Work Area Clearance:** Specified in Section 01714 Work Area Clearance

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 GENERAL:

A. **Complete the following before start of work** of this section:

1. 01527 Regulated Areas

2. 01562 Respiratory Protection

3. 01561 Worker Protection - Repair and Maintenance

3.2 WET CLEANING:

A. **Accomplish wet cleaning** during decontamination with paper towels or disposable rags:

B. **Immerse paper towel** or rag in container of amended water or dilute removal encapsulant.

C. **Wring out,**

D. **Fold into quarters,**

E. **Wipe surface once** and refold to a fresh face of cloth. Proceed in this manner nntil all available faces of paper towel or rag have been used.

F. **Dispose of paper towel** or rag,

G. **Do not place rag back in container** to rinse out or for any other purpose. If a used towel or rag comes in contact with water, empty container and refill.

H. **Material adhered** to a surface with removal encapsulant may require the application of additional removal encapsulant to facilitate cleaning.

3.3 REMOVAL OF ASBESTOS-CONTAINING DEBRIS

A. *Work of this Section is limited to the cleanup of a small quantity of amassed debris which has fallen from an architectural finish, fire-proofing, or thermal insulation on pipes, boilers and other equipment.*

B. **Remove asbestos-containing debris** and decontaminate the area involved using the following sequence:

1. Shut down all ventilation into room.

2. Seal entrance to work area with 6 mil (0.15 mm) polyethylene. Slit polyethylene for entry. Install flap to cover the slit automatically, tape slit closed after entry.

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3. Start HEPA vacuum before entering the area.

4. Use the HEPA vacuum to clean a path at least 6 feet (1.83 m) wide from the entry point of the work area to the site of the fallen material.

5. Remove all small debris with the HEPA vacuum.

6. HEPA vacuum surfaces of all pieces too large to be removed by the suction of the HEPA vacuum.

7. Pick up such pieces and place in the bottom of a 6 mil (0.15 mm) polyethylene disposal bag conforming to the requirements of Section 02084 Disposal of Regulated Asbestos-Containing Material. Place pieces in the bag without dropping and avoiding unnecessary disturbance and release of material.

8. Remove all remaining visible debris with HEPA vacuum.

9. HEPA vacuum an area 3 feet (0.91 m) beyond the location in which any visible debris was found in two directions each at right angles to the other.

10. Place a 6 mil (0.15 mm) polyethylene drop cloth in accordance with Section 01527, Local Area Protection, immediately on top of the HEPA vacuumed area before performing any repair work on site from which fall-out occnrred.

11. HEPA vacuum the site from which material fell removing all loose material which can be removed by the vacuums suction.

12. Repair or remove remaining material.

13. HEPA vacuum ladder and/or any tools used and pass out of the work area.

C. **HEPA vacuum all surfaces** in the room starting at the top of wall and working downward to the floor. Then start at corner of floor farthest from Work Area entrance and work towards entrance.

1. HEPA vacuum the floor using a floor attachment with rubber floor seals and adjustable floor to attachment height. Adjust the height so that the rubber seals just touch the floor if carpeted and are within 1/16 inch (1.6 mm) of hard surface floors. Vacuum the floor in parallel passes with each pass overlapping the previous by one-half the width of the floor attachment. At the completion of one cleaning vacuum the floor a second time at right angles to the first.

D. **Secure area from occupaney** until air monitoring results per Section 01714 Project Decontamination indicate that area is safe for reoccupancy.

3.4 CLEANING AND DECONTAMINATING OBJECTS

A. **Perform all work of decontaminatiug objects** wherever possible on a plastic drop sheet installed in conformance with Section 01527.

"NOT FOR BIDDING"

B. **HEPA vacuum** all surfaces of object and immediate area before moving the object.

C. **Pick-up object**, if possible, and HEPA vacuum all surfaces.

D. **Hand to off-sheet worker** who will wet-clean object, if possible, and place in storage location.

E. **Decontaminate area** where object was located by HEPA vacuuming twice, in two perpendicular directions. Wet clean if necessary to remove any debris.

F. **Return object** to its original location.

3.5 DECONTAMINATION OF ROOMS:

A. **Shut down all ventilation into space.**

B. **Seal entry to Work Area** with 6 mil (0.15 mm) polyethylene. Slit polyethylene for entry. Install a flap to cover the slit automatically; tape slit closed after entry.

C. **Install Differential Pressure System** in accordance with Section 01513.

D. **Recirculate HEPA filtered fan units** in space by operating them so that discharge from machine is back into room. Use one HEPA filtered fan unit for each 2,500 cubic feet (70.8 cubic meters) of room volume.

E. **HEPA vacuum all surfaces** in the room starting at the ceiling, then top of wall and working downward to the floor.

F. **HEPA vacuum the floor** using a floor attachment with rubber floor seals and adjustable floor to attachment height. Adjust the height so that the rubber seals just touch the floor if carpeted and are within 1/16 inch (1.6 mm) of hard surface floors. Vacuum the floor in parallel passes with each pass overlapping the previous by one half the width of the floor attachment. At the completion of one cleaning, vacuum the floor a second time at right angles to the first.

G. **Operate HEPA filtered fan unit** in space for 96 air changes minimum.

H. **At completion of Decontamination Work** workers decontaminate in accordance with Section 01561 Worker Protection - Repair and Maintenance.

I. **Secure area from occupancy** until air monitoring results per Section 01714 Work Area Clearance indicate area is safe for reoccupancy.

END OF SECTION - 01712

"NOT FOR BIDDING"

PART III

TECHNICAL SPECIFICATIONS

"NOT FOR BIDDING"

DIVISION 2 - SITEWORK

SECTION 02062 - NON-ASBESTOS DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **Extent of non-asbestos selective demolition** work is indicated on drawings and in section 01013 of this specification.

B. **Non-Asbestos Demolition Work:** Non-asbestos demolition requires the selective removal and subsequent off site disposal of the following non- asbestos containing installations:

1. *Portions of building structure indicated on drawings and as required to accommodate new construction.*
2. *Block wall penetrations (50 total) will be installed at all water sources in the work area to verify if ACBMs are located in the interstitial spaces. Please refer to section 010123 for additional details.*
3. *Carpet in the guidance office may be disposed of as non-ACM if the floor tiles beneath do not detach from the floor and are not attached to the carpet.*
4. *1'x1' Ceiling tiles in the classrooms may need to be removed in order to access asbestos piping.*
5. *Plaster walls and ceiling will need to be disturbed in order to access enclosed asbestos piping located in the classrooms.*
6. *Vinyl baseboard may be disposed of as construction and demolition debris.*

"NOT FOR BIDDING"

C. **Decontaminated Materials:** The following materials are to be decontaminated in work of other sections. These decontaminated materials are to be disposed of as work of this section.

D. **Asbestos-Containing Materials (ACM):** The following are asbestos-containing or asbestos- contaminated installations which are not to be disturbed during work of this section:

E. **Removal work specified elsewhere:**

F. **Related work specified elsewhere:**

1. *Remodeling construction work and patching is included within the respective Sections of Specifications, including removal of materials for re-use and incorporated into remodeling or new construction.*
2. *Relocation of pipes, conduits, ducts, other mechanical and electrical work are specified by respective trades.*

1.3 SUBMITTALS:

A. **Schedule:** Submit schedule indicating proposed methods and sequence of operations for non- asbestos demolition work to Designer for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.

1. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
2. Coordinate with Owner's continuing occupation of portions of existing building.

1.4 JOB CONDITIONS:

A. **Occupancy:** Owner will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will impact Owner's normal operations.

B. **Conditiou of Structures:** Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of commencement of Contract will be maintained by Owner insofar as practicable. However, variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.

"NOT FOR BIDDING"

C. **Partial Demolition and Removal:** Items indicated to be removed but of salvable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

1. Storage or sale of removed items on site will not be permitted.

D. **Protections:** Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied portions of building.
2. Erect temporary covered passageways as required by authorities having jurisdiction.
3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished, and adjacent facilities or work to remain.
4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
5. Protect floors with suitable coverings when necessary.
6. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks if required.
7. Provide temporary weather protection during interval between demolition and

removal of existing construction on exterior surfaces, and installation of new construction to insure that no water leakage or damage occurs to structure or interior areas of existing building.

8. Remove protections at completion of work.

E. **Damages:** Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

F. **Traffic:** Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities

1. Do not close, block or otherwise obstruct streets, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. **Explosives:** Use of explosives will not be permitted.

H. **Explosives:** Do not bring explosives to site or use explosives without written consent of authorities having jurisdiction. Such written consent will not relieve Contractor of total responsibility for injury to persons or for damage to property due to blasting operations. Perform required blasting complying with governing regulations.

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I. **Utility Services:** Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

1. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

J. **Environmental Controls:** Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions, such as ice, flooding, or pollution.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 INSPECTION:

A. **Prior to commencement of selective demolition work**, inspect areas in which work will be performed. Photograph existing conditions of structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from selective demolition work. Submit copies of photographs to Designer prior to starting work.

3.2 PREPARATION:

A. **Decontamination Unit:** Prior to beginning work of this Section complete installation of a Personnel Decontamination Unit as described in Section 01563 Decontamination Units.

B. **Competent Person:** Work of this Section is to be supervised by an OSHA Competent Person as described in Section 01043 Project Coordination.

C. **Provide interior and exterior shoring**, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.

1. Cease operations and notify the Designer immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.

D. **Cover and protect furniture**, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.

1. Erect and maintain dustproof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.

2. In areas where asbestos abatement work is to follow selective demolition erect barriers to control access as described in Section 01563 "Temporary enclosures."

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3. Provide weatherproof closures for exterior openings resulting from demolition work.

E. **Work Site Isolation:** Isolate the site of selective demolition work from occupied portions of the building prior to start of demolition activities. Work site isolation includes:

1. Erection of Critical Barriers as described in Section 01526 Temporary Enclosures

2. Installation and operation of Pressure Differential and Ventilation System as describe in Section 01513

3. Locate, identify, stub off and disconnect utility services that are not indicated to remain

4. Provide by-pass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shutdown of service is necessary during change-over.

3.3 DEMOLITION:

A. **Perform selective demolition work** in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

B. **Demolish concrete and masonry in small sections.** Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.

C. **Locate demolition equipment** throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing.

D. **Provide services** for effective air and water pollution controls as required by local authorities having jurisdiction.

E. **Demolish foundation walls to a depth** of not less than 12 inches (300 mm) below existing ground surface. Demolish and remove below-grade wood or metal construction. Break up below-grade concrete slabs.

F. **For interior slabs on grade**, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.

G. **Completely fill below-grade areas** and voids resnlting from demolition work. Provide fill consisting of approved earth, gravel or sand, free of trash and debris, stones over 6 inch (150 mm) diameter, roots or other organic matter.

H. **If unanticipated mechanical**, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Designer in written, accurate detail. Pending receipt of directive from Designer rearrange selective demolition schedule as necessary to continue overall job progress without delay.

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I. **Asbestos contamination:** If a disturbance of ACM occurs remove any released material and decontaminate the immediate vicinity of the release in accordance with the requirements of Section 01712 Cleaning & Decontamination Procedures.

3.4 SALVAGE MATERIALS:

A. **Salvage Items:** Where indicated on Drawings as "Salvage - Deliver to Owner," carefully remove indicated items, clean, store and turn over to Owner and obtain receipt.

1. Historic artifacts, including cornerstones and their contents, commemorative plaques and tablets, antiques, and other articles of historic significance remain the property of the Owner. Notify Designer if such items are encountered and obtain acceptance regarding method of removal and salvage for Owner.

B. **Carefully remove,** clean, and deliver to Owner the following items:

3.5 HAZARDOUS WASTE MANAGEMENT AND DISPOSAL.

A. **Do not mix potentially hazardous waste streams.** Where feasible, separate each type of hazardous waste from other types of hazardous wastes, from asbestos waste and from construction waste.

B. **Segregate, package, label, transport and dispose** of Hazardous Waste in accordance with DOT, EPA, State and Local regulations.

DISPOSAL OF DEMOLISHED MATERIALS:

C. **Remove debris, rubbish** and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.

D. **If hazardous non-asbestos containing materials** are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution.

E. **Burning** of removed materials is not permitted on project site.

F. **Disposal of asbestos-containing waste** is not in the work of this section. Disposal of this material is specified in Section 02084 Disposal of Regulated Asbestos Containing Material.

3.6 CLEAN-UP AND REPAIR:

A. **Upon completion** of demolition work, remove tools, equipment and demolished materials from site.

B. **In areas where no asbestos abatement work is to occur**, remove protections and leave interior areas broom clean.

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C. **In areas where asbestos abatement work is to occur**, leave protections in place as required by abatement work. Leave area broom clean. Additional cleaning as required for abatement work is not in work of this section.

D. **Repair** demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

E. **Perform** all repair work in asbestos abatement Work Areas after completion of asbestos abatement work.

END OF SECTION 02062

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 02063 - REMOVAL OF ASBESTOS CONTAMINATED MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY OF WORK:

A. **Work of this section includes** removal and disposal of all non-Asbestos-Containing Material including but not limited to:

1. Removal of all carpeting within the guidance office.
2. Removal of all vinyl baseboard in the work areas.
3. Removal of plaster walls and ceiling in the work area.
4. Removal of 1'x1' ceiling tiles in the classrooms.
5. Removal of block wall in the work area.

PART 2 - PRODUCTS

2.1 MATERIALS

A. **Unlabeled Clear Bags:** Provide clear 6 mil (0.15 mm) thick leak-tight polyethylene bags with no label.

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B. **Disposal Bags:** Provide disposal bags as described in Section 02084 "Disposal of Regulated Asbestos-Containing Material"

PART 3 - EXECUTION

3.1 SEQUENCE

A. **Before beginning work of this section** comply with:

1. 01503 Temporary Facilities - Asbestos Abatement
2. 01513 Temporary Pressure Differential and Air Circulation System
3. 01563 Decontamination Units
4. 01526 Temporary Enclosures
5. 01560 Worker Protection - Asbestos Abatement
6. 01562 Respiratory Protection
7. Section 01527 - Regulated Areas
8. Section 01529 - Mini Enclosures and Glovebags
9. Section 01561 - Worker Protection - Repair & Maintenance
10. Section 01562 - Respiratory Protection

3.2 CEILING TILE SYSTEM:

A. **Non-Asbestos Ceiling Tiles:** Remove sufficient ceiling tiles to gain access to top of ceiling system. Dispose of tiles as non-asbestos waste.

3.3 CARPETING:

A. **Cut seams in the carpeting and roll up** into rolls of carpeting that are no wider than factory width of carpeting. Roll or fold padding as necessary. Remove dust and debris from floor after removal of carpeting and padding by HEPA vacuuming followed by wet wiping.

1. Dispose of rolled carpeting as normal construction debris.

3.4 VINYL BASEBOARD:

A. **Remove vinyl baseboard** in a manner to prevent damage to the wall surfaces. All vinyl baseboard may be dispose of as normal construction debris.

3.5 AIRBORNE FIBER LEVELS:

A. **Airborne Fiber Levels:** Maintain airborne fiber levels less than the "Stop Action Levels" set forth in Section 01013 "Summary of Work - Asbestos Abatement."

3.6 BLACKBOARDS AND WALLBOARDS:

A. **Blackboards and Wallboards** must be disposed of as asbestos waste. Please refer to section 01013 for additional details.

END OF SECTION - 02063

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 02081 - REMOVAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. **Worker Protection** requirements are set forth in Section 01560 Worker Protection - Asbestos abatement.

B. **Installation of Critical and Primary Barriers**, and Work Area Isolation Procedures are set forth in Section 01526 Temporary Enclosures.

C. **Project Decontamination** procedures after removal of the Secondary Barrier are specified in Section 01711 Project Decontamination.

D. **Disposal of asbestos-containing waste** is specified in Section 02084 Disposal of Regulated Asbestos-Containing Material.

E. **Section 02086 Hazardous Waste Management** describes the management and disposal of hazardous waste such as PCB Ballasts, fluorescent light tubes, and mercury containing thermostats encountered during the work of this section.

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1.3 SUBMITTALS:

A. **Before Start of Work:** Submit the following to the Designer for review. Do not start work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. **Surfactant:** Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.

2. **Removal Encapsulant:** Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.

3. **NESHAP Certification:** Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet Asbestos-Containing Materials (ACM) to which it is applied as required by the National Emission Standard for Hazardous Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M).

B. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal has been' "Received - Not Reviewed."

1. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:
   a. Surfactants.
   b. Encapsulants.
   c. Solvents.

PART 2 - PRODUCTS:

2.1 MATERIALS

A. **Wetting Materials:** For wetting prior to disturbance of ACM use either amended water or a removal encapsulant:

B. **Amended Water:** Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether mixed with five gallons (19 liters) of water.

C. **Removal Encapsulant:** Provide a penetrating type encapsulant designed specifically for removal of ACM. Use a material which results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50 percent polyoxyethylene ester and 50 percent polyoxyethylene ether in five gallons (19 liters) of water.

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D. **Polyethylene Sheet:** A single polyethylene film in the largest sheet size practicable to minimize seams, 6.0 mil (0.15 mm) thick clear, frosted, or black as indicated.

E. **Polyethylene Sheet:** Provide 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, 6.0 mil (0.15 mm) thick frosted or black as indicated.

F. **Duct Tape:** Provide duct tape in 2 inch or 3 inch (50mm or 75 mm) widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

G. **Spray Cement:** Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

H. **Disposal Bags:** Provide 6 mil (0.15 mm) thick leak-tight polyethylene bags labeled as required by Section 02084 Disposal of Regulated Asbestos Containing Material.

I. **Fiberboard Drums:** Provide heavy duty leak tight fiberboard drums with tight sealinglocking metal tops.

J. **Paper board Boxes:** Provide heavy duty corrugated paper board boxes coated with plastic or wax to retard deterioration from moisture. Provide in sizes that will easily fit in disposal bags.

K. **Felt:** Standard felt approximately 1/16 inch (1.6 mm) thick and 36 inches (900 mm) to 72 inches (1800 mm) in width.

PART 3 – EXECUTION

3.1 SECONDARY BARRIER:

A. **Secondary Barrier:** Over the Primary Barrier, install as a drop cloth a clear 6 mil (0.15 mm) sheet plastic in all areas where asbestos removal work is to be carried out. Completely cover floor with sheet plastic. Where the work is within 10 feet (3 m) of a wall extend the Secondary Barrier up wall to ceiling. Support sheet plastic on wall with duct tape, seal top of Secondary plastic to Primary Barrier with duct tape so that debris is unable to get behind it. Provide cross strips of duct tape at wall support as necessary to support sheet plastic and prevent its falling during removal operations.

1. **Install Secondary Barrier** at the beginning of each work shift. Install only sufficient plastic for work of that shift.

2. **Remove Secondary Barrier** at end of each work shift or as work in an area is completed. Fold plastic toward center of sheet and pack in disposal bags. Keep material on sheet continuously wet until bagged.

3. **Install Walkways** of black 6 mil (0.15 mm) plastic between active removal areas and decontamination units to protect Primary Layer from tracked material. Install walkways at the beginning of, and remove at the end of, each work shift.

3.2 WORKER PROTECTION:

A. **Before beginning work** with any material for which a Material Safety Data Sheet has been submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

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3.3 WET REMOVAL:

A. **Thoroughly wet** to satisfaction of Designer ACM to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation which has been painted and/or jacketed in order to allow penetration of amended water or removal encapsulant, or use injection equipment to wet material under the covering. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

1. **Mist work area continnously** with amended water whenever necessary to reduce airborne fiber levels.

2. **Remove saturated ACM** in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into disposal bags. Twist neck of bags, bend over and seal with minimum three wraps of duct tape. Clean outside and move to Wash Down Station adjacent to Material Decontamination Unit.

3. **Evacuate air from disposal bags** with a HEPA filtered vacuum cleaner before sealing.

B. **Fireproofing or Architectural Finish on Scratch Coat:** Spray asbestos-containing fireproofing or architectural acoustic finish with a fine mist of amended water or removal encapsulant. Allow time for amended water or removal encapsulant to saturate materials to substrate. Do not over- saturate to cause excess dripping. Scrape materials from substrate. Remove materials in manageable quantities and control the descent to staging or floor below, if over 20 feet (6000 mm) use drop chute to contain material during descent. If using amended water, spray mist surface continuously during work process. If using removal encapsulant follow manufacturer's written instructions. Remove residue remaining on scratch coat after scraping using stiff nylon bristled hand brush. Use high pressure washer only with written authorization of Designer. If a removal encapsulant is used remove residue completely before encapsulant dries. If substrate dries before complete removal of residue re-wet with amended water or removal encapsulant.

C. **Fireproofing or Architectural Finish on Wire Lath:** Spray asbestos-containing fireproofing or architectural acoustic finish with a fine mist of amended water or removal encapsulant. Allow time for amended water or removal encapsulant to saturate material completely. Do not over-saturate to cause excess dripping. If surface of material has been painted or otherwise coated cut small holes as required and apply amended water or removal encapsulant from above. Cut wire lath into manageable sections and cut hanger wires. Roll or fold up complete with ACM and hand place in container. Do not drop on floor. After removal of lath and ACM remove any overspray on decking and structure above using stiff nylon bristled brush. Use high pressure washer only with written authorization from Designer. Use one of the following methods for containing waste.

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1. **Deposit material in corrugated paper board box.** When box is full duct tape closed and place in disposal bag.

2. **Wrap material in felt** and place in fiberboard drum lined with two disposal bags. Use caution to insure that all edges of wire lath that could cut plastic are covered with felt.

3. **Place material directly in a steel drum.** Seal drums when full with leak tight seal. Drum is to be leak tight in any orientation.

D. **Pipe Insulation:** Spray with a mist of amended water or removal encapsulant. Allow amended water or removal encapsulant to saturate material to substrate. If a removal encapsulant is used, use in strict accordance with manufacturer's instructions. Cut bands holding preformed pipe insulation, slit jackets at seams, remove and hand-place in a disposal bag. Remove job-molded fitting insulation in chunks and hand place in a disposal bag. Do not drop to floor. Remove any residue on pipe or fitting with stiff bristle nylon hand brush. In locations where pipe fitting insulation is removed from pipe with straight runs insulated with fibrous glass or other non-asbestos-containing fibrous material, remove fibrous material 6" (150 mm) from the point where it contacts the asbestos-containing insulation.

3.4 DRY REMOVAL:

A. **Dry Removal:** of ACM is required in the following areas where wetting may create a hazard for workers or damage equipment or finishes.

1. *Electrical closet on each floor: this space contains the vertical electrical bus for the building. This bus operates at 480 volts and must be kept in operation at all times.*

2. *Transformer vault: This space contains four large transformers operating at 14,000 volts on the primary side. These transformers must be kept in operation at all times.*

3. *High pressure steam lines from the boiler header to Steam Turbine no. 2. These line are operating at 300 psi (2100 kPa) and 422 degrees Fahrenheit (217 degrees Celsius) and cannot be shut down.*

4. *North Data Processing Center: This space contains operating computer equipment that must be maintained in operation throughout the work.*

5. *Reading Room: The damask wall coverings in this room are approximately 250 years old and extremely fragile.*

B. **Isolate dry removal area** from balance of Work Area by a Critical Barrier as described in Section 01526 Temporary Enclosures and a pressure differential between the dry removal area and Work Area as described in Section 01513 Pressure Differential System.

C. **EPA Authorization:** Do not begin dry removal work until authorized in writing by the EPA NESHAP coordinator and the Designer.

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D. **OSHA Notification:** Do not begin dry removal work until notification to OSHA required by 29 CFR 1926.1101(g)(4)(6) is made.

E. **Active Electrical Equipment:** Do not wet materials in the vicinity of active electrical equipment. Dry remove any ACM in the vicinity of active electrical equipment.

1. **Restrict Access:** Maintain existing access restrictions to areas with active electrical equipment. Allow access to area only to qualified trades persons with prior experience in the installation and repair of involved equipment.

2. **Warning Signs:** Post warning signs at the entry point to active electrical equipment as required by OSHA or other applicable regulation.

3. **Personnel:** Work on active electrical equipment is to be performed by qualified trades persons with prior experience in the installation or repair of the involved equipment. Restrict access to electrical equipment.

4. **Electrical Isolation:** Cover exposed conductors with a minimum 1/8 inch (3 mm) thick neoprene blanket draped over the conductor and surrounding area.

5. **Protective Equipment:** Provide workers working on or in the vicinity of active electrical with appropriate protective equipment including insulating gloves, boots, and non-conductive tools.

6. **Work Procedures:** Perform removal work using "Localized Control of Material Release" and "Local Ventilation and Collection System" procedures described below.

F. **Hot Equipment:** Do not wet materials on hot piping or equipment. Dry remove any ACM on hot equipment.

1. **Restrict Access:** Maintain any existing access restrictions to areas with hot equipment. Provide railing or other barriers to prevent accidental contact with hotequipment. Allow access to area only to qualified trades persons with prior experience with the type of equipment involved.

2. **Warning Signs:** Post warning signs at hot equipment as required by OSHA or other applicable regulation.

3. **Personnel:** Work on hot equipment is to be performed by qualified trades persons with prior experience with the type of equipment involved. Restrict access to electrical equipment.

4. **Re-insulation:** Re-insulate equipment immediately following visual inspection. Do not allow more than 8 linear feet (2400 mm) of piping to be exposed at any time.

5. **Protective Equipment:** Provide workers working on or in the vicinity of hot equipment with appropriate protective equipment including insulating gloves, boots, and coveralls.

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6. **Work Procedures:** Perform removal work using "Localized Control of Material Release" and "Local Ventilation and Collection System" procedures described below.

3.5 LOCALIZED CONTROL OF MATERIAL RELEASE:

A. **Pipe Insulation:** HEPA vacuum surface of pipe insulation. Cut bands holding preformed pipe insulation, slit jackets at seams while holding HEPA vacuum under cut, remove and hand-place in a disposal bag. Remove job-molded fitting insulation in chunks, using nozzle of HEPA vacuum to collect debris generated, and hand-place in a disposal bag. Do not drop to floor. Remove any residue on pipe or fitting with wire brush. Brushing toward the nozzle of a HEPA vacuum. In locations where pipe fitting insulation is removed from pipe with straight runs insulated with fibrous glass or other non-asbestos-containing fibrous material, remove fibrous material 6 inches (150 mm) from the point where it contacts the asbestos-containing insulation. Use a two worker crew for work, with one worker removing material and one worker holding the nozzle of a HEPA vacuum in the location of disturbance.

B. **Material sprayed on wire lath:** Hold the nozzle from an operating HEPA filtered vacuum cleaner in the immediate vicinity of and below the work while cutting the wire lath or otherwise disturbing the ACM. Use a two-worker crew for cutting, with one worker cutting and one worker holding the HEPA vacuum nozzle.

3.6 LOCAL VENTILATION AND COLLECTION SYSTEM:

A. **Provide local ventilation and collection systems** as described below for each area where amosite or dry ACM is being removed or otherwise disturbed:

1. **Provide HEPA filtered fan units in addition** to those required by section 01513, in the vicinity of the work. Arrange so that the units exhaust into the Work Area oriented in a direction away from the work. Extend a 12 inch (300 mm) diameter flexible non-collapsing duct from the intake end to a point no more than 4 feet (1200 mm) from any scraping or wire brushing activity.

2. **Locate intake** of duct so that air flow is horizontally and slightly downward into intake. Replace primary filters on HEPA filtered fan units at an interval of no greater that 30 minutes. Allow no more than one scraping or wire brushing activity per fan unit.

3. **Attach a job-built 4 feet X 4 feet** (1200 mm x 1200 mm) flared end piece on intake end of duct. Support end piece horizontally at a point 4 feet (1200 mm) below the work, so that airflow is downward into intake.

3.7 HAZARDOUS WASTE MANAGEMENT AND DISPOSAL.

A. **Manage and dispose of hazardous waste** such as PCB ballasts, fluorescent light tubes, and mercury thermostats in accordance with the requirements of Section 02086 - Hazardous Waste Management.

B. **Do not mix potentially hazardous waste streams.** Where feasible, separate each type of hazardous waste from other types of hazardous wastes, from asbestos waste and from construction waste.

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C. **Segregate, package, label, transport and dispose** of Hazardous Waste in accordance with DOT, EPA, State and Local regulations.

END OF SECTION - 02081

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SECTION 02084 - DISPOSAL OF REGULATED ASBESTOS-CONTAINING MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. **Worker protection requirements** are set forth in Sections 01560 Worker Protection - Asbestos abatement

B. **Section 01098 Codes, Regulations and Standards - Asbestos Abatement** describes applicable federal, state and local regulations.

1.3 DESCRIPTION OF THE WORK:

A. **This section describes the disposal of Regulated Asbestos-Containing Materials (RACM).** Disposal includes packaging of Regulated Asbestos-Containing Materials. Disposal may be accomplished either by land filling or converting Regulated Asbestos Containing Materials to non Asbestos waste.

1.4 SUBMITTALS:

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A. **Before Start of Work:** Submit the following to the Designer for review. Do not start work until these submittals are returned with Designer's action stamp indicating that the submittal is returned for unrestricted use.

1. **Copy of state or local license** for waste hauler.
2. **Name and address of landfill** where Regulated Asbestos Containing Materials are to be buried. Include contact person and telephone number.
3. **Name and address of processor** where Regulated Asbestos-Containing Materials are to be processed into non-asbestos waste. Include contact person and telephone number. Also provide the following information about the process and operation used by the processor:

   a. Results of start-up performance testing and performance testing for last 90 days including operating parameters, feed characteristics, and analysis of output materials.
   b. Results of composite analysis required during initial 90 days of operation and results of composite analysis of monthly product composite samples for last 90 days.
   c. Results of continuous monitoring and logs of process operating parameters for the initial 90 days and last 90 days of operation.
   d. A description of any deviation from the operating parameters established during performance testing, the duration of the deviation, and steps taken to correct the deviation.

e. Product data on process to be used

4. **Chain of Custody form** and form of waste manifest proposed
5. **Sample of disposal bag** and any added labels to be used.

B. **On a weekly basis** submit copies of all manifests and disposal site receipts to Designer.

C. **Waste Shipment Record:** Maintain a waste shipment record as required by the NESHAP regulation which indicates the waste generator, transporter, and disposal site, and which describes the nature, size, type of container, and form of asbestos waste. Submit to Designer within 35 days of departure from building.

PART 2 - PRODUCTS:

2.1 MATERIALS

A. **Disposal Bags:** Provide 6 mil (0.15 mm) thick leak-tight polyethylene bags labeled with three labels with text as follows:

1. **First Label:** Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER CONTAINS
ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE FIBERS IS
HAZARDOUS TO YOUR HEALTH

"NOT FOR BIDDING"

2. **Second Label:** Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances

RQ-ASBESTOS
WASTE CLASS 9
NA2212-PG III

3. **Third Label:** Provide the name of the waste generator (Owner's name), the location from which the waste was generated and the names and addresses of the contractor and transporter. This label must be durable, able to repel dirt and moisture (e.g., permanent marker). Label must be placed directly on disposal bag(s) in a legible format. **Peel and stick type labels are expressly prohibited.**

2.2 VITRIFICATION:

A. **Convert Regulated Asbestos-Containing Materials to non-asbestos waste** by thermal conversion in a process including the following principal elements. Comply with all EPA and DOT requirements for asbestos waste until the waste is converted:

1. **Receiving and storage:** areas that are maintained as contained controlled areas isolated by physical barriers and a pressure differential

2. **Melting:** process that is intrinsically safe in that it will not allow unconverted asbestos to appear in the final product under any circumstances

B. **Processor:** Use a processor that meets all the requirements of the EPA NESHAP regulation for an operation that converts regulated asbestos-containing material and asbestos-containing waste material into non-asbestos (asbestos-free) material as set forth in 40 CFR 61 Sub-part A and M section 61.155

C. **Available Processors:** Subject to compliance with requirements, providers of processes include, but are not limited to, the following:

D. **Processors:** Subject to compliance with requirements, utilize process provided by one of the Following:

1. GTS Duratek
   8955
   Guilford Rd
   Suite 200
   Columbia, MD 21045
   (800) 638-3838
2. Penberthy
   Electromelt 631
   So. 96th Street
   Seattle, WA
   98108

PART 3 - EXECUTION

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3.1 SEQUENCE

A. **Comply with the following sections** during all phases of this work:

1. **Section 01560** Worker Protection - Asbestos Abatement
2. **Section 01562** Respiratory Protection

3.2 GENERAL:

A. **All waste** is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.

B. **Liquid waste:** Mix all liquid asbestos-containing waste or asbestos contaminated waste with a bladeable material so that it forms a bladeable (non-liquid) form, and have the concurrence of the landfill operator prior to disposal.

C. **Load all adequately wetted Regulated Asbestos-Coutaining Material** in disposal bags or leak- tight containers. All materials are to be contained in one of the following

1. **Two 6 mil (0.15 mm) disposal bags** or
2. **Two 6 mil (0.15 mm) disposal bags and a fiberboard drum** or
3. **Sealed steel drnm** with no bag

D. **Protect interior of truck** or dumpster with Critical and Primary Barriers as described in Section 01526 Temporary Enclosures.

E. **Carefully load containerized waste** in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.

F. **Warning Signs:** During loading and unloading mark dumpsters, receptacles and vehicles with a sign complying with requirements of the EPA NESHAP regulation (40 CFR Part 61), in a manner and location that a person can read the following legend :

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
Authorized Personnel Only

G. **Do not store containerized materials ontside of the Work Area.** Take containers from the Work Area directly to a sealed truck or dumpster.

H. **Do not transport disposal bagged materials on open trucks**. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as Regulated Asbestos-Containing Material and dispose of in accordance with this specification.

I. **Advise the landfill** operator or processor, at least ten days in advance of transport, of the quantity of material to be delivered.

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J. **At disposal site** unload containerized waste:

1. **At a disposal site**, sealed plastic bags may be carefully unloaded from the truck. If bags are broken or damaged, return to work site for rebagging. Clean entire truck and contents using procedures set forth in section 01711 Project Decontamination.

2. **At a processing site** truck and loading dock are arranged as a controlled work area and containerized waste is transferred to storage area by site personnel. All bags including broken ones will be transferred. Clean truck, using procedures set forth in section 01711 Project Decontamination.

K. **Retain receipts from landfill** or processor for materials disposed of.

L. **At completion of hauling** and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to Designer.

END OF SECTION - 02084

SECTION 02085 - RESILIENT FLOORING REMOVAL - RESILIENT FLOOR COVERING MANUFACTURERS' RECOMMENDED WORK PRACTICES:

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. **Drawings and general provisions of the Contract**, including General and Supplementary Conditions and the following Division 1 Specification Sections, may apply to this Section.

1. Section 01013 - Summary of the Work - Asbestos Abatement
2. Section 01028 - Application for Payment - Asbestos Abatement
3. Section 01701 - Contract Closeout - Asbestos Abatement

C. **Work** described by this section relates to work practices as currently set forth in "Recommended Work Practices for the Removal of Resilient Floor Coverings," revised August, 1995, published by:

1. Resilient Floor Covering
   Institute 966 Hungerford Drive
   Suite 12-B
   Rockville, MD 20850

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2. Armstrong World Industries, Inc.
   P.O. Box 3001
   Lancaster, PA
   17604

1.2 SUMMARY

A. **This Section** includes work practices for removal of resilient floor covering materials which are "intact," and are likely to remain intact during the removal, and can be removed under a negative exposure assessment in compliance with the OSHA standard by appropriately trained workers using the Recommended Work Practices.

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

1. **Division 2 Section 02084 "Disposal of Regulated Asbestos-Containing Material"** for disposal of friable asbestos-containing waste. Note, that resilient floor covering is defined by the EPA NESHAP regulation as Category 1 non-friable ACM and as such is not covered by Section 02084. Resilient floor covering materials should be disposed of in accordance with any applicable state and local regulations.

1.3 DEFINITIONS

A. **Compliant Work Practices:** Work practices for the removal of flooring material which OSHA

has determined will consistently result in exposures below the TWA and excursion limit established by 29 CFR 1926.1101. Recommended Work Practices described in this Section have been recognized by OSHA as Compliant Work Practices.

B. **Recommended Work Practices:** "Recommended Work Practices for the Removal of Resilient Floor Coverings," revised August, 1995, published by the Resilient Floor Covering Institute (RFCI) and Armstrong World Industries, Inc.

C. **Friable:** Material that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

D. **Intact:** means that ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. The incidental breakage of flooring materials, or slicing of sheet vinyl floor covering with a sharp edged instrument, during removal operations conducted in accordance with the Recommended Work Practices does not mean that the materials are not removed in an intact conditions. Intact resilient floor covering materials will be rendered friable if subjected to sanding, sawing or other aggressive operations.

E. **Competent Person:** An individual with the training and experience required by OSHA for a Competent Person involved in removal of intact flooring material using compliant work practices (12 hours of training). The competent person will supervise the work of this section, and is responsible for the health and safety of workers at the flooring material removal job site. The competent person must have authority to stop work, and take corrective action.

F. **Initial Exposure Assessment:** An inspection made by a Competent Person of the job site prior to the start of removal operations for the purpose of determining if the requirements of a negative exposure assessment are met.

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G. **Negative Exposure Assessment:** Based on data in the rulemaking record, OSHA has determined that worker exposures will consistently be below the TWA and excursion limit during removal of intact flooring material when compliant work practices are used. As such, a Competent Person may make a negative exposure assessment when:

1. Recommended Work Practices will be used.
2. Workers are properly trained.
3. The resilient flooring is intact and is likely to remain intact throughout the removal process.

1.4 WORKER PROTECTION

A. **Worker Training:** Workers using the Recommended Work Practices for the intact removal of resilient floor covering materials must have completed an 8-hour training program as required by the OSHA regulation 29 CFR 1926.1101(k) and the Compliance Directive CPL 2-2.63 Appendix D, covering asbestos subjects as well as training in the Recommended Work Practices. Workers with this amount of training only are not permitted to continue working if the material becomes non-intact.

B. **Competent Person:** Engage a person experienced in the use of the Recommended Work Practices who has completed an 8-hour worker training program and additional 4 hours of training as required by the OSHA regulation 29 CFR 1926.1101(k) and the Compliance Directive CPL 2-2.63 Appendix D, for a Competent Person involved in removal of intact flooring material using compliant work practices. Competent Persons with this amount of training only are not

permitted to continue working if the material becomes non-intact.

C. **State and Local Requirements:** All workers are to be trained, certified and accredited as required by state or local regulation.

D. **Medical Surveillance:** Workers who engage in the removal of asbestos-containing flooring materials for more than 30 days per year (one hour or more per day) must receive medical surveillance. This requires a medical examination within 10 working days following the 30th day of exposure.

E. **Prohibitions in work area:** Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area.

F. **Certificate of Worker Acknowledgment:** Have each worker who is at the job site or who will enter the work area, fill out and sign a copy of the Certificate of Worker's Acknowledgment found at the end of this section.

1.5 QUALITY ASSURANCE

A. **Notifieations:** Before the start of Work notify the following of the presence and location of ACM and of the planned removal activity:

1. Employees performing the work.
2. Employers of employees working in the area (not separated from the work area by either a wall, closed door or window or other impermeable barrier).
3. The building owner.

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B. **Regulatory Compliance:** Comply with provisions of the following:

1. OSHA Construction Standard for Asbestos 29 CFR 1926.1101

2. OSHA Compliance Directive CPL 2-2.63 November 3, 1995, Inspection Procedures for Occupational Exposures to Asbestos Final Rule 29 CFR Parts 1910.1001, 1926.1101, and 1915.1001. .

3. OSHA 29 CFR 1926.2 through 35

4. AHERA Regulation 40 CFR 763 Sub-Part E

5. Applicable state and local regulations.

C. **Non-Intact Material:** If the resilient flooring materials become non-intact during the work, stop work until the job can be evaluated by a competent person. Do not resume work until:

1. The job can be evaluated and supervised by a competent person who has completed a training course meeting the criteria of EPA's Model Accreditation Plan for supervisors, and

2. The work will be carried out by workers who have completed training meeting the criteria of the EPA's Model Accreditation Plan for asbestos abatement workers.

3. The work will be carried out in accordance with worker and area protection specified in Section 02087.

1.6 SUBMITTALS

A. **Negative Exposure Assessment:** Before starting any work submit a Negative Exposure Assessment certified by a Competent Person to the Owner. If a Negative Exposure Assessment cannot be made, report the reasons and any corrective action that would result in a Negative Exposure Assessment. The certification must be signed and dated by a Competent Person and be based on an Initial Assessment of the work of this contract. A copy of the negative exposure assessment should be retained by the employer of the Competent Person. The certification must include:

1. The name and signature of the Competent Person making the Assessment.

2. Certification that the Competent Person has been trained as required by OSHA for work on intact resilient flooring.

3. A description of the work including:
   a. Name and address of facility where the work is to occur.
   b. Description of location within the facility where work is to occur.

4. Certification that:
   a. Recommended Work Practices will be used.
   b. Workers will be properly trained as required by OSHA for work on intact resilient flooring.
   c. The resilient flooring is intact and is likely to remain intact throughout the removal process.

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5. Complete and submit to the Owner the job form from "Using Compliant Work Practices to Remove Resilient Floor Covering" published by the Resilient Floor Covering Institute (RFCI) and Armstrong World Industries, Inc. This form is to be signed by a Competent Person. Retain a copy of the form.

6. Certificate of Worker Acknowledgment: Submit an original signed copy of the Certificate of Worker's Acknowledgment found at the end of this section, for each worker who is to be at the job site or who will enter the work area.

PART 2 - PRODUCTS:

2.1 MATERIALS

A. **Wetting Materials:** For wetting prior to disturbance of asbestos-containing sheet flooring or asphaltic adhesive, use liqnid dishwashing detergent that contains anionic, nonionic, and amphoteric surfactants.

1. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

2. **Manufacturer:** Subject to compliance with requirements, provide products of one of

the following:

a. Procter & Gamble Ivory Liquid
Cincinnati, Ohio 45202

B. **Waste Bag:** Large size heavy-duty impermeable trash bag made from 6 mil (0.15 mm) thick polyethylene. Identify with a label stating "DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND LUNG DISEASE HAZARD."

C. **Waste Container:** Closed leak-tight container. Identify with a label stating "DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND LUNG DISEASE HAZARD."

D. **Scrapers:** Broad stiff-bladed wall or floor scrapers. Heavy-duty short or long handled scraper.

E. **Cutting Sand:** No. 1 sandblasting sand (clean, sharp, coarse cutting sand).

F. **Terrazzo Floor Machine:** Terrazzo or low-speed floor machine fitted with a floor plate attachment (similar to Clark Assembly 500202-6).

G. **Removal Solution:** Solution used to remove adhesive residue. e.g. Mop on, mop off, no machine scrub - wax stripping solution.

H. **Floor Pad:** Black floor scrubbing pad.

I. **HEPA Filter Vacuum Cleaners:** Use wet/dry tank-type vacuum cleaner equipped with a filter and metal floor attachment (no brush).

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1. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

2. **Manufacturer:** Subject to compliance with requirements, provide products of one of the following:

a. Nilfisk of America, Inc. Vacuums 225 Great Valley Parkway Malvern, PA 19355 (800) 645-3475	HEPA-Filtered
b. Minuteman International, Inc. 111 South Rohlwing Road Vacuums Addison, IL 60101 (708) 627-6900	Minuteman HEPA
c. Pullman-Holt (White) Corporation Vacuums PO Box 16647 Tampa, FL 33617 (813) 645-3475	HEPA-Filtered

J. **Thermal Equipment with Automatic Control:**

1. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

2. **Manufacturer:** Subject to compliance with requirements, provide products of one of the following:

   a. Enviromethods, Inc. "Delta T" series
      P.O. Box 6151
      Wolcott, CT
      06716 203-879-
      5527

   b. UAS Automation Systems, Inc. "ATR" (Automated Tile Removal)
      series 4524 Parkway Commerce Blvd.
      Orlando, FL 32808
      407-294-8551 or 800-969-8837

K. **Miscellaneous Equipment:** Provide as needed the following equipment: utility or hook knife, ground fault circuit interrupter, hand sprayer, hammer or mallet, commercial-type, hand-held, hot-air gun or radiant heat source, hand-held rubbing stones, slip resistant shoes or boots, chisel, heavy gloves, duct tape, safety glasses.

L. **Use a Ground Fault Circuit Interrupter (GFCI)** for any electrical connections in a wet environment.

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PART 3 - EXECUTION

3.1 GENERAL:

A. **Assume an asbestos coutent:** Unless indicated in the contract documents that a flooring material is a non-asbestos product, assume it contains asbestos and treat it in the manner prescribed by the following procedures which are based on the "Recommended Work Practices for the Removal of Resilient Floor Coverings," published by the Resilient Floor Covering Institute and Armstrong World Industries. Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing lining felt or asphaltic "cut back" adhesives.

B. **Before beginning removal** of any resilient flooring materials complete the following

1. **Negative Exposure Assessment:** Before starting any work require that a Competent Person make an Initial Exposure Assessment of the resilient flooring to be removed. Begin work only if the Competent Person makes a Negative Exposure Assessment. Based on data in the rulemaking record, OSHA has determined that worker exposures will consistently be below the TWA and excursion limit during removal of intact flooring material when compliant work practices are used. As such, a Competent Person may make a negative exposure assessment when:

   a. Recommended Work Practices will be used.
   b. Workers are properly trained.
   c. The resilient flooring is intact and is likely to remain intact throughout the

removal process.

If a Negative Exposure Assessment cannot be made, report the reasons and any corrective action that would result in a Negative Exposure Assessment.

2. **Notifications:** Before the start of Work notify the following of the presence and location of ACM and of the planned removal activity:

   a. Employees performing the work.
   b. Employers of employees working in the area (not separated from the work area by either a wall, closed door or window or other impermeable barrier).
   c. The building owner.

3. **Demarcation:** The work area must be demarcated or access must be limited to workers performing the removal. Post warning signs that read:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE
HAZARD AUTHORIZED PERSONNEL
ONLY

4. **Preparation:** Prior to beginning the removal of resilient floor covering complete the following:

   a. Remove appliances and furniture from the work area.
   b. Remove binding strips or other restrictive molding from doorways, walls, etc.
   c. Mix a detergent solution (16 ounces (0.473 liters) of liquid dishwashing detergent to 1 gallon (3.79 liters) of water) and pour into a garden sprayer.
   d. Clean the entire floor using a wet/dry vacuum cleaner equipped with a HEPA filtration system with disposable bag and metal floor attachment (no brush). Do not dry sweep; do not create dust.
   e. Precaution: Resilient flooring becomes slippery when wet with a detergent solution. Use caution to contain the solution in the immediate work area. Stand on a sheet of plywood or non-slip surface while working on wet surfaces.
   f. After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and place in a waste bag or waste container.

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C. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.2 REMOVAL OF PERIPHERALLY-ADHERED RESILIENT SHEET VINYL FLOORING:

A. **Use the following procednres** to remove adhered portions of the sheet vinyl floor covering:

1. The manufacturer's recommend that two workers be utilized to perform sheet flooring removal. The Contractor should consider the particular circumstances of the project and determine the advisability of requiring a minimum of two workers as a quality assurance measure.

2. Make a slice with a sharp knife into the adhered floor covering 4 to 8 inches(102 to 203 mm) wide, parallel with the walls, around the perimeter of the room.

3. Starting on either side of the entrance door, pry up the corner of the first strip, separating the backing layer. As the strip is being removed, spray a constant mist of the detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, any felt remaining on the floor and on the back of the strip will be thoroughly wet. Peel the strip either by pulling upward at an angle that permits the best separation or by rolling around a core.

4. Roll the strip tightly as it is removed. Tie or tape securely and immediately place in a waste bag or waste container for disposal.

5. Remove all of the exposed residual felt by wet scraping, using the procedures under, "Wet Scraping Residual Felt," in this section, before proceeding with removal of the unadhered portion of the floor covering. Residual felt must be removed by wet scraping. Do not sand or dry scrape in any way. Do not dry sweep. Avoid creating dust.

6. Remove additional strips, following the above procedure, as necessary to expose unadhered subfloor area.

7. Continue around the room completely removing the adhered flooring along the perimeter, one strip at a time following the procedures above. Do not remove the flooring at the entrance doorway until all other flooring has been completely removed.

8. Vacuum up any residue of wet felt scrapings immediately with a wet/dry vacuum equipped with a HEPA filter and metal floor attachment (no brush).

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9. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

10. Remove the unadhered flooring as detailed in the article in this Section on "Removal of Unadhered Resilient Floor Covering."

B. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.3 REMOVAL OF UNADHERED RESILIENT FLOOR COVERING:

A. **Use the following procedure** to remove loose laid or the unadhered portion of peripherally adhered sheet resilient floor covering:

1. The manufacturer's recommend that two workers be utilized to perform sheet flooring removal. The Contractor should consider the particular circumstances of the project and determine the advisability of requiring a minimum of two workers as a quality assurance measure.

2. Start at the end of the room farthest from the entrance doorway and slice a strip 18 inches

(0.46m) wide in the unadhered flooring.

3. Remove the sliced strips while spraying the detergent solution into the separation nip point. Do not stand or kneel on the exposed subfloor during the removal process.

4. Roll the wet strip tightly and tie or tape to secure. Continue working toward the doorway, slicing each strip and removing it while spraying the separation nip point with the detergent solution. Place the strips while still wet into a waste bag or waste container.

5. After removing three strips of flooring, vacuum the exposed floor using a wet/dry vacuum equipped with a HEPA filter with metal floor attachment (no brush).

6. Seams and other adhered areas should be removed as they are encountered. Strip the wear surface while spraying the detergent solution into the delamination nip point. Wet scrape the residual felt as described under, " Wet Scraping Residual Felt" in this section.

7. Continue removing flooring, doing only one three-strip area at a time, until the entire floor has been completely removed.

8. When the whole floor has been completely removed, let it dry. Vacuum up any dust using a vacuum with a HEPA filtration system and a metal floor attachment (no brush). Stand only in vacuumed areas as work proceeds across the floor. Position the vacuum cleaner so that discharge air does not blow on the floor being cleaned. Do not dry sweep. Avoid creating dust.

9. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

"NOT FOR BIDDING"

10. When floor is dry, install new resilient floor covering following manufacturers' installation recommendations.

B. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.4 REMOVAL OF ADHERED RESILIENT SHEET VINYL FLOORING:

A. **Use the following procedure** to completely remove adhered resilient sheet flooring.

1. The manufacturer's recommend that two workers be utilized to perform sheet flooring removal. The Contractor should consider the particular circumstances of the project and determine the advisability of requiring a minimum of two workers as a quality assurance measure.

2. Make a series of parallel slices, with a knife, 4 to 8 inches (102 to 203 mm) apart parallel to a wall.

3. Start at the end of the room farthest from the entrance door. Pry up the corner of the first strip, separating the backing layer. As the strip is being removed, spray a constant mist of the detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, any felt remaining on the floor and on the back of the strip

will be thoroughly wet. Peel the strip either by pulling upward at an angle that permits the best separation or by rolling around a core.

4. Roll the strip tightly as it is removed. Tie or tape securely and immediately place in a waste bag or waste container for disposal.

5. If parts of the foam inner-layer remain stuck to the backing, attempt to eliminate this condition by pulling the strips loose from the opposite end. Peel the foam inner-layer from the floor while spraying the detergent solution into the delamination nip point.

6. Some resilient flooring is not readily strippable by hand. When these conditions are encountered, a sharp stiff blade scraper may be used to assist cleavage of the wear layer from felt. If this procedure is used the distance between slices must be narrowed to a width of 3 to 5 inches (76 to 127 mm).

7. Regardless of whether stripping of the wear surface is accomplished by hand peeling alone or with the assistance of a stiff blade scraper, detergent solution must be sprayed into the delamination nip point to minimize any airborne dust particles.

8. After removing three strips of the wear surface, remove the remaining residual felt by wet scraping using the procedures "Wet Scraping Residual Felt," in this section. During the stripping process, do not stand or walk on the exposed felt.

9. After removing the three strips of flooring and residual felt vacuum the exposed floor using a wet/dry vacuum equipped with a HEPA filter and metal floor attachment (no brush).

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10. Repeat the operation (wetting the delamination nip point while removing the next three strips, then wet scrape the residual felt, then vacuum the exposed floor). Do only one three-strip area at a time until the entire floor has been completely removed.

11. Place all flooring strips and felt scrapings immediately while wet into waste bags or waste containers. Close full bags and containers tightly and seal securely for disposal.

12. Do not dry sweep. Avoid creating dust.

13. When all floor covering has been completely removed, let the floor dry. Vacuum up any dirt using a vacuum with a HEPA filtration system and a metal floor attachment (no brush). Stand only in the vacuumed area as the work proceeds across the floor. Position the vacuum cleaner so the discharge air does not blow on the floor being cleaned.

14. After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and place in a waste bag or waste container.

15. When the floor is dry, it is ready to have a new resilient floor covering installed. Follow the floor covering manufacturer's instructions.

B. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.5 WET SCRAPING RESIDUAL FELT:

A. **Remove any residual felt** remaining on the floor after removal of the wear layer of adhered vinyl sheet flooring by using the following procedure:

1. Thoroughly wet residual felt with detergent solution. Avoid excessive wetting or standing water. Wait a few minutes to allow solution to soak into felt.

2. Stand on the remaining floor covering (not the felt) and use a stiff-bladed scraper or a floor scraper with a replaceable blade to remove the wet felt.

3. Re-wet the felt if the solution has not completely penetrated, if drying occurs or if dry felt is exposed during scraping. Scrape all felt from each three-strip area before proceeding further. Pick up the scrapings as they are removed from the floor and place in a waste bag or waste container.

4. Wet residual felt as above but do not excessively soak or flood wood floors with detergent solution. Excessive water can damage wood floors to the extent that new underlayment could be required. A floor that has been wet scraped must be allowed to dry thoroughly before new resilient flooring is installed.

5. As removal progresses, vacuum the area using a vacuum cleaner equipped with a HEPA filter and metal floor attachment (no brush).

6. After removal is complete and the entire floor has dried, vacuum using a HEPA vacuum with a metal floor attachment (no brush).

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7. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

B. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.6 REMOVAL OF RESILIENT TILE FLOOR COVERING:

A. **Use the following procedure** to remove resilient tile floor covering:

1. Begin removal in an area that receives the minimum foot traffic.

2. Floor tiles must be wetted (misted with a garden sprayer) before actual removal begins, unless heat will be used to remove tiles.

3. Start removal by carefully wedging a wall scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Continue to force the balance of the tile up by working the scraper beneath the tile. Exert both a forward pressure and a twisting action on the blade to promote release of the tile from the adhesive and the floor.

4. When the first tile is removed place it, without breaking it further into smaller pieces, in a waste bag or waste container.

5. After the first tile is removed and accessibility to other tiles is improved, force the wall scraper under the exposed edge of another tile. Continue to exert a prying twisting force to the scraper as it is moved under the tile until the tile releases from the floor. Again, dispose of the tile, and snceeding tiles, by placing in a waste bag or waste container without additional breaking.

6. Force the scraper through tightly-adhered areas by striking the scraper handle with a hammer using blows of moderate force while maintaining the scraper at a 25 to 30 degree angle to the floor. The resilient floor covering manufacturers' work practices recommend use of safety goggles during this work.

7. Continue to wet (mist) the tiles throughout the procedure

8. It should be the goal to remove individual tiles as a complete unit, although breakage of tiles is unavoidable.

9. If the procedure above is inadequate to loosen tiles use heat to soften adhesive, or alternatively, without first prying up floor tiles using a scraper, thoroughly heat the tile(s) with a hot air gun or radiant heat source until the heat penetrates through the tile and softens the adhesive, and remove tiles by hand or by using a scraper. The resilient floor covering manufacturers work practices recommend that the hot air gun or radiant heat source, tiles and adhesive be carefully handled to avoid burns, and that heated tiles and adhesive be handled only with suitable glove protection for hands. Caution: Over-heating resilient tile might produce harmful vapors and a respirator with organic cartridges might be needed.

"NOT FOR BIDDING"

10. Deposit tiles in a waste bag or leak-tight container. Do not attempt to break tiles after they are in bag.

B. **Wet Scrape Residual Adhesive:** As small areas of subfloor are cleared of tile, wet scrape residual asphaltic "cut-back" adhesive so that no ridges or puddles are evident and what remains is a thin, smooth film.

1. Start in the corner of the room farthest from the entrance door and moisten an area of the adhesive (approximately 3 by 10 feet) (0.91m by 3.05m) with water mixed with liquid dishwashing detergent (to aid in wetting the adhesive). Wet scrape with a stiff-bladed wall or floor scraper removing ridges and any loose adhesives.

2. Place loosened adhesive residues into a waste bag or waste container

3. Wet vacuum standing water with HEPA wet/dry vacuum.

4. Continue the above steps until what remains of the residual asphaltic "cut-back" adhesive is a thin, smooth film.

C. **Wet Remove residue of adhesive from Concrete:** Completely remove residue of adhesive left after removal of resilient floor tile using the following procedure:

1. Place cutting sand (enough to cover an area of approximately 6 by 6 foot (1.83 by 1.83 m) into a container, add water mixed with liquid detergent (1 ounce (30 ml) of liquid dishwashing detergent to 1 gallon (3.79 liters) of water) to dampen the sand (20 pounds (9.07 kg) of sand to ½ gallon (1.89 liters) of solution).

2. Place sand over a 6 by 6 foot (1.83 by 1.83 m) area and wet remove the existing adhesive residue using a terrazzo floor machine. Keep sand under rubbing stones when operating the machine. The sand and subfloor must be continuously kept wet.

3. Occasionally push away cutting sand from the subfloor with a wall or floor scraper to check for complete removal.

4. Remove adhesive around the edge of the room and missed areas with dampened, clean, sharp, cutting sand and a hand held rubbing stone.

5. Wet-scrape sand into a pile using a stiff-bladed floor or wall scraper and place sand and adhesive residue in a waste bag or waste container.

6. Rinse area with clear clean water using a hand sprayer. Worker's boots should also be rinsed and cleaned.

7. Wet-vacuum standing water with HEPA wet/dry vacuum with a metal floor attachment (no brush).

8. Continue with the above steps until the entire room is complete.

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9. Allow subfloor to dry and vacuum up any remaining dirt or sand using a vacuum equipped with a HEPA filter and metal floor attachment (no brush).
10. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

11. Wet-wipe and/or wash down all equipment used during the work.

D. **Wet Remove residue of adhesive from Concrete:** Completely remove residue of adhesive left after removal of resilient floor tile using the following procedure:

1. Start in the corner of the room farthest from the entrance door . Put the removal solution onto the residual adhesive with a hand sprayer or mop over a 6' X 6' (1.82m X 1.82m) Put enough removal solution (e.g. "mop on, mop off, no machine scrub" stripping solution) to ensure that the area is thoroughly wet. Allow the area to soak for 5-10 minutes. Remove the adhesive using a floor machine equipped with a black floor pad (or equivalent). The subfloor must be kept continuously wet.

2. Occasionally push away the adhesive slurry from the subfloor with a wall or floor scraper to check for complete removal. Continue to use the floor machine, equipped with the black pad, in the same area until the concrete subfloor is cleaned to the desired degree.

3. Remove adhesive around the edge of the room, from missed areas, and from areas difficult to reach with the machine with a hand held piece of the black floor pad using the above procedure.

4. Wet HEPA vacuum the adhesive slurry. When the HEPA vacuum is full, place a commercially suitable water absorbent into the HEPA container until the adhesive slurry is absorbed. Place adhesive waste in a waste bag or waste container.

5. Rinse area with clear clean water using a hand sprayer or mop. Worker's boots should also be rinsed and cleaned.

6. Wet-vacuum standing water with HEPA wet/dry vacuum with a metal floor attachment (no brush).

7. Continue with the above steps until the entire room is complete.

8. Allow subfloor to dry and vacuum using a vacuum equipped with a HEPA filter and metal floor attachment (no brush).

9. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

10. Wet-wipe and/or wash down all equipment used during the work.

E. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

3.7 REMOVAL OF THIN WOOD UNDERLAYMENT

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A. **Thin wood underlayment covered with existing sheet vinyl.** Remove thin wood underlayment covered with existing sheet-vinyl-resilient flooring, with the flooring adhered. Use the following procedure:

1. Locate the joints of the underlayment panel farthest from the entrance door.

2. Slice a strip of the flooring 4 to 8 inches (102 to 203 mm) wide centered over the underlayment joint in the panel being removed.

3. Pry up the corner of the strip separating the backing layer. As the strip is being removed, spray a constant mist of the detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, any felt remaining on the floor and on the back of the strip will be thoroughly wet. Peel the strip either by pulling upward at an angle that permits the best separation or by rolling around a core.

4. Roll the strip tightly as it is removed. Tie or tape securely and place in a waste bag or waste container for disposal.

5. Remove all of the exposed residual felt by wet scraping using the procedures of, "Wet Scraping Residual Felt," in this section before proceeding.

6. Drive a cold chisel using a hammer or mallet into the joint at a corner of the panel. Now use the chisel to pry the panel up far enough to insert a pry bar. Continue working around

the panel, lifting all edges slowly. Use one or two pry bars to pry up the underlayment panel a little at a time until the panel is completely loose and can be removed. Attempt to remove the panel in one piece.

7. If the panel breaks, slice the resilient flooring at the break and spray the detergent solution onto the exposed felt. Allow the solution to penetrate for a few minutes, then continue lifting the broken underlayment.
8. Remove each underlayment panel or piece from the work areas as it is lifted. The resilient floor covering manufacturers work practices recommend that workers wear heavy gloves when handling removed panels, and be very careful of wood splinters and protruding fasteners. Flatten the fasteners with a hammer and stack the panels back to back on pallets or place in dumpster. Identify panels with a label stating, "DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND LUNG DISEASE HAZARD." Dispose of in an approved landfill only.

9. Place any small wood or flooring scrapes in a waste bag or waste container.

10. If the underlayment extends under cabinets or wall partitions, slice through the flooring with a knife as close to the vertical surface as possible, deeply scoring the panel.

11. After each panel has been lifted and removed from the work area, pull up any remaining nails or fasteners in the subfloor.

12. Continue removing each underlayment panel in sequence following the above procedures.

13. When the underlayment / resilient flooring removal is complete, vacuum with a HEPA filter and metal floor Attachment (no brush).

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14. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

B. **Removal of thin wood underlayment covered with existing tile.** Remove the underlayment with the tile adhered using the following procedure:

1. Floor tiles must be wetted (misted with a garden sprayer) before actual removal begins, unless heat will be used to remove tiles.

2. Starting at the doorway or a floor ventilation vent, locate a joint in an underlayment board.

3. Start removal by carefully wedging a wall scraper in the seam of two adjoining tiles and gradually force the edge of one of the tiles up and away from the floor. Continue to force the balance of the tile up by working the scraper beneath the tile. Exert both a forward pressure and a twisting action on the blade to promote release of the tile from the adhesive and the floor.

4. When the first tile is removed place it, without breaking it further into smaller pieces, in a waste bag or waste container.

5. After the first tile is removed and accessibility to other tiles is improved, force the wall scraper under the exposed edge of another tile. Continue to exert a prying twisting force to the scraper as it is moved under the tile until the tile releases from the floor. Again,

dispose of the tile, and succeeding tiles, by placing in a waste bag or waste container, without additional breaking.

6. Force the scraper through tightly adhered areas by striking the scraper handle with a hammer using blows of moderate force while maintaining the scraper at a 25 to 30 degree angle to the floor. Use eye protectives and other protective equipment required for the work.

7. Continue to wet (mist) the tiles throughout the procedure.

8. It should be the goal to remove individual tiles as a complete unit, although breakage of tiles is unavoidable.

9. If the procedure above is inadequate to loosen tiles use heat to soften adhesive. Thoroughly heat the tile(s) with a hot air gun or radiant heat source until the heat penetrates through the tile and softens the adhesive. The resilient floor covering manufacturers work practices recommend that the hot air gun or radiant heat source, tiles and adhesive be carefully handled to avoid burns, and that heated tiles and adhesive be handled only with suitable glove protection for hands.

10. After all tiles have been removed from the underlayment joints, drive a chisel, using a hammer or a mallet, between the underlayment board and the subfloor. Use the chisel to pry up the underlayment enough to insert a pry bar and remove the chisel. Slowly and carefully use pry bars to pry up the underlayment board a little at a time until the board is completely loose and can be removed.

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11. Use caution to avoid breaking the underlayment board. The underlayment board should be removed in one piece. If the underlayment board breaks, heat and slice the tile at the break, then continue to remove broken underlayment.

12. The Resilient floor covering manufacturers work practices recommend that workers wear heavy gloves and be careful of wood splinter and fasteners sticking out the back of the underlayment. Remove each underlayment board (or piece of board) from the work area as soon as it has been pried up to avoid injuries (such as stepping on a nail). Flatten with a hammer fasteners protruding from a removed board. Place removed underlayment boards on skids with the nails pointing downward. Wrap skid with 6 mil (0.15 mm) polyethylene sheet plastic and secure with duct tape. Label panels in the same manner as waste bags.

13. After each board has been removed, pull out any nails or fasteners still in the subfloor. Dispose of these and any other nails or fasteners which have been removed but are still lying in the work area.

14. After the first board has been removed a chisel is not needed to start removal of boards. Work pry board under the exposed edge of the next board.

15. When removal of underlayment/existing tile floor is complete, thoroughly check the exposed subfloor. Re-nail loose areas and reset "popped" nails and fasteners.

16. Vacuum up any dirt in the area using a vacuum cleaner equipped with a HEPA filter and metal floor attachment (no brush).

17. After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturers' instructions and placed in a waste bag or waste container.

C. **Disposal of materials:** Dispose of friable materials in accordance with Section 02084 "Disposal of Regulated Asbestos Containing Material". Dispose of Category I non-friable waste in accordance with State and Local Regulations.

END OF SECTION - 02085

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ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

SECTION 09251 - GYPSUM BOARD - ASBESTOS ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **Types of work include** enclosure of Asbestos-Containing Materials (ACM) by the following methods:

1. Gypsum board including screw-type metal support system
2. Gypsum board directly applied to solid (continuous) substrates
3. Gypsum board applied to wood framing and furring
4. Drywall finishing (joint tape-and-compound treatment)
5. Wood framing and furring are specified in Division 6

1.3 DEFINITIONS:

A. "Enclosure":

1. An air-tight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

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2. A space, within which asbestos abatement operations are performed, whose limits are defined by rigid or non-rigid barriers for the purpose of controlling access and limiting fiber escape.

1.4 QUALITY ASSURANCE:

A. **Fire-Resistance Rating:** Where gypsum board systems with fire-resistance ratings are indicated, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to authorities having jurisdiction.

1. Provide fire-resistance rated assemblies identical to those indicated by reference to GA File Nos. in GA "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in test reports of other testing and agencies acceptable to authorities having jurisdiction.

B. **Gypsum Board Terminology Standard:** GA-505 by Gypsum Association.

1.5 SUBMITTALS:

A. **Product Data:** Submit manufacturer's product literature for each gypsum board component, including other data as may be required to show compliance with these specifications.

1.6 DELIVERY, STORAGE AND HANDLING:

A. **Deliver materials** in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. **Store materials** inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. **Handle gypsum boards** to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

1.7 PROJECT CONDITIONS:

A. **Environmental Requirements**, General: Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.

B. **Cold Weather Protection:** When ambient outdoor temperatures are below 50 degrees F (10 degrees C) maintain continuous, uniform, comfortable building working temperatures of not less than 50 degrees F (10 degrees C) for a minimum period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding of adhesives.

C. **Ventilation:** Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.

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1. Use HEPA filtered fan units as described in section 01513 for ventilation if required prior to clearance of work area in accordance with Section 01711.

PART 2 - PRODUCTS

2.1 METAL SUPPORT MATERIALS:

A. **Ceiling Support Materials and Systems:**

1. General: Size ceiling support components to comply with ASTM C 754 unless otherwise indicated.
2. Main Runners: Steel channels with rust-inhibitive finish, hot or cold-rolled.
3. Hanger Wire: ASTM A 641, soft, Class 1 galvanized.
4. Hanger Rods and Flats: Mild steel with zinc or equally rust inhibitive coating for rods and zinc or rust-inhibitive paint finish for flats.
5. Hanger Anchorage Devices: Screws, clips, bolts, or other devices applicable to the indicated method of structural anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for 3 x calculated load supported except size direct pull-out concrete inserts for 5 x calculated loads.
6. Furring Members: ASTM C 645; 0.0179 inch (0.455 mm) min. thickness of base metal, hat-shaped.

   a. Where shown as "Resilient", provide manufacturer's special type designed to reduce sound transmission.

7. Fnrring Members: ASTM C 645; 0.0179 inch (0.455 mm) min. thickness of base metal, C- shaped studs.
8. Furring Anchorages: 16 gage galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails or screws as recommended by furring manufacturer and complying with ASTM C 754.
9. Direct Suspension Systems: Manufacturer's standard zinc-coated or painted steel system of furring runners, furring tees, and accessories designed for concealed support of gypsum board ceilings; of proper type for use intended.

B. **Wall/Partition Support Materials:**

1. Studs: ASTM C 645; 0.0179 inch (0.455 mm) min. thickness of base metal unless otherwise indicated.

   a. Depth of Section: 3-5/8 inch (90 mm), except as otherwise indicated.

2. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

3. Furring Members: ASTM C 645; 0.0179 inch (0.455 mm) min. thickness of base metal, hat-shaped.

   a. Where shown as "Resilient," provide manufacturer's special type designed to reduce sound transmission.

4. Fasteners for Furring Members: Type and size recommended by furring manufacturer for substrate and application indicated.

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2.2 GYPSUM BOARD PRODUCTS:

A. **Gypsum Wallboard:** ASTM C 36, of types, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.

1. Type: Regular, unless otherwise indicated
2. Type: Foil-backed where indicated
3. Type: Type X for fire-resistant rated assemblies and where indicated
4. Edges: Tapered
5. Edges: Tapered and featured (rounded or beveled) for prefilling
6. Thickness: 5/8 inch (16 mm), unless otherwise indicated
7. Thickness: ½ inch (13 mm), unless otherwise indicated
8. Thickness: 3/8 inch (10 mm), unless otherwise indicated
9. Thickness: as indicated, or if not otherwise indicated, as required to comply with ASTM C 840 for application system and support spacing indicated

B. **Gypsum Backing Board for Multi-Layer Applications**: ASTM C 442 or, where backing board is not available from manufacturer, gypsum wallboard, ASTM C 36, of type, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end joints.

1. Type: Regular, unless otherwise indicated
2. Type: Foil-backed where indicated
3. Type: Type X for fire-resistance rated assemblies and where indicated
4. Edges: Manufacturer's standard
5. Edges: Square, non-tapered; or V-tongue and groove
6. Thickness: 5/8 inch (16 mm), unless otherwise indicated

7. Thickness: ½ inch (13 mm), unless otherwise indicated
8. Thickness: 3/8 inch (10 mm), unless otherwise indicated
9. Thickness: As indicated, or if not otherwise indicated, as required to comply with ASTM C 840 for application system and support spacing indicated

C. **Water-Resistant Gypsum Backing Board:** ASTM C 630, with tapered edges and of type and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.

1. Type: Regular, unless otherwise indicated
2. Type: Type X for fire-resistant rated assemblies and where indicated
3. Thickness: 5/8 inch (16 mm), unless otherwise indicated
4. Thickness: ½ inch (13 mm), unless otherwise indicated
5. Thickness: As indicated, or if not otherwise indicated, 5/8 inch (16 mm)

D. **Exterior Gypsum Soffit Board:** ASTM C 931, with manufacturer's standard edges, of type and thickness indicated below:

1. Type: Regular, unless otherwise indicated
2. Type: Type X for fire-resistance rated assemblies and where indicated
3. Thickness: 5/8 inch (16 mm), unless otherwise indicated
4. Thickness: ½ inch (13 mm), unless otherwise indicated

2.3 TRIM ACCESSORIES:

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A. **General:** Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, special L-kerf-type edge trim-beads, and one-piece control joint beads.

B. **Semi-Finishing Type:** manufacturer's standard trim units which are not to be finished with joint compound (non-beaded).

C. **Plastic Edge Trim:** manufacturer's standard rigid or semi-rigid PVC moldings of the semi-finished type, shaped to provide resilient contact of gypsum board edges with other work; friction-fit, or pressure-sensitive adhesive mounting.

2.4 JOINT TREATMENT MATERIALS:

A. **General:** ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.

B. **Joint Tape:** Paper reinforcing tape

C. **Joint Compound:** Vinyl-type powder for interior use

D. **Joint Compound:** Ready-mixed vinyl-type for interior use

1. A single multi-purpose type, for entire application
2. 2 separate types; one specifically for bedding tapes and filling depressions, and one for topping and sanding

E. **Joint Compound:** on interior work provide chemical-hardening-type for bedding and filling,

ready-mixed vinyl-type or vinyl-type powder type for topping.

2.5 MISCELLANEOUS MATERIALS:

A. **General:** Provide auxiliary materials for gypsum board work of the type and grade recommended by the manufacturer of the gypsum board.

B. **Laminating Adhesive:** Special adhesive or joint compound specifically recommended for laminating gypsum boards

C. **Fastening Adhesive (for Wood):** ASTM C 557

D. **Gypsum Board Screws:** Comply with ASTM C 1002

E. **Gypsum Board Nails:** Comply with ASTM C 514

F. **Concealed Acoustical Sealant:** Non-drying, non-hardening, non-skinning, non-staining, non- bleeding, gunnable sealant for concealed applications per ASTM C 919

G. **Exposed Acoustical Sealant:** Non-oxidizing, skinnable, paintable, gunnable sealant for exposed applications per ASTM C 919

H. **Sound Attenuation Blankets:** FS HH-I-521, Type I; semi-rigid mineral fiber blanket without membrane, Class 25 flame-spread, thicknesses as indicated

I. **Ceramic Tile Adhesive:** Type I organic adhesive for ceramic tile complying with ANSI A136.1

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PART 3 - EXECUTION

3.1 PREPARATION FOR METAL SUPPORT SYSTEMS

A. **Ceiling Anchorages:** Before starting work of this section complete the following:

1. Section 01513 - Temporary Pressure Differential & Air Circulation System
2. Section 01563 - Decontamination Units
3. Section 01526 - Temporary Enclosures
4. Section 01560 - Worker Protection - Asbestos Abatement
5. Section 01562 - Respiratory Protection

B. **Ceiling Anchorages:** Before starting of work of this section complete the following:

1. Section 01527 - Regulated Areas
2. Section 01561 - Worker Protection - Repair & Maintenance
3. Section 01562 - Respiratory Protection

C. **Wall Anchorages:** Before starting work of this section complete the following:

1. Section 01513 - Temporary Pressure Differential & Air Circulation System
2. Section 01563 - Decontamination Units
3. Section 01526 - Temporary Enclosures
4. Section 01560 - Worker Protection - Asbestos Abatement
5. Section 01562 - Respiratory Protection

D. **Wall Anchorages:** Before starting work of this section complete the following:

1. Section 01527 - Regulated Areas

2. Section 01561 - Worker Protection - Repair & Maintenance
3. Section 01562 - Respiratory Protection

3.2 INSTALLATION OF METAL SUPPORT SYSTEMS:

A. General:

B. ACM: In disturbing ACM comply with the following:

1. Section 01046 - Cutting and Patching Asbestos-Containing Materials
2. Section 01529 - Mini Enclosures and Glovebags

C. Metal Support Installation Standard: Comply with ASTM C 754.

1. Do not bridge building expansion joints with support system. Frame both sides of joints with furring and other support as indicated. Provide air tight seal between partition and adjacent surfaces.

2. Nail or screw furring members to wood framing as indicated.

D. Ceiling Support Suspension Systems:

1. Secure hangers to structural support by connecting directly to structure where possible while avoiding contact with ACM; otherwise connect to inserts, clips or other anchorage devices or fasteners as indicated.

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2. Space main runners 4 feet (1200 mm) o.c. and space hangers 4 feet (1200 mm) o.c. along runners, except as otherwise shown.

3. Level main runners to a tolerance of 1/4 inch (6 mm) in 12 feet (3600 mm), measured both lengthwise on each runner and transversely between parallel runners.

4. Wire-tie or clip furring members to main runners and to other structural supports as indicated.

E. Direct-hung Metal Support System: Attach perimeter wall track or angle wherever support system meets vertical surfaces. Mechanically join support members to each other and butt-cut to fit into wall track.

1. Space furring member 16 inches (400 mm) o.c., except as otherwise indicated.

2. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

F. Wall/Partition Support Systems:

1. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar work to comply with details indicated or, if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer.

2. Isolate stud system from transfer of structural loading to system, both horizontally and

vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

3. Install runner tracks at floors, ceilings and structural walls and columns where gypsum board stud system abuts other work, except as otherwise indicated.

4. Extend partition stud system through acoustical ceilings and elsewhere as indicated to the structural support or substrate above the ceiling.

5. Space studs 16 inches (400 mm) o.c., unless otherwise indicated.

6. Space studs 24 inches (600 mm) o.c., unless otherwise indicated.

7. Frame door openings to comply with detail indicated or, if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for jack studs) at head and secure to jamb studs.

8. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above, unless otherwise indicated.

9. Frame openings other than door openings to comply with details indicated or, if not indicated, in same manner as required for door openings; install framing below sills of openings to match framing required above door heads.

10. Space wall furring members 16 inches (400 mm) o.c., unless otherwise indicated.

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11. Space wall furring members 24 inches (600 mm) o.c., unless otherwise indicated.

3.3 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

A. **Gypsum Board Application and Finishing Standards:** ASTM C 840 and GA 216.

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1foot (300 mm) in alternate courses of board.

2. Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1 foot (300 mm).

3. Install wall/partition boards vertically or horizontally to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

4. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch (1.6 mm) open space between boards. Do not force into place.

5. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field- cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

6. Attach gypsum board to supplementary framing and blocking; Provide for additional support at openings and cutouts.

7. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories. Provide air tight seal.

8. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are properly braced internally.

9. Except where concealed application is required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.75 sq meters) in area, and may be limited to not less than 75 percent of full coverage.

10. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to ½ inch (6 mm to 13 mm) space and trim edge with J-type semi-finishing edge trim. Provide air tight seal.

B. **Floating Construction:** Where feasible, including where recommended by manufacturer, install gypsum board over wood framing, with "floating" internal corner construction.

C. **Air-Tight Seal:** Provide air-tight seal at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of beads, and seal flanking paths around or through the work, including sealing of partitions above acoustical ceilings.

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1. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

3.4 METHODS OF GYPSUM BOARD APPLICATION:

A. **Single-layer Application:** Install gypsum wallboard.

1. On ceilings; Apply gypsum board prior to wall/partition board application to the greatest extent possible.

2. On partitions/walls: Apply gypsum board either vertically (parallel) or horizontally, unless otherwise indicated, and provide sheet lengths which will minimize end joints. Select method which will eliminate gaps in enclosure that cannot be closed with sealant.

3. Wall Tile Base: Where gypsum board is base for thin-set ceramic tile and similar rigid applied wall finishes, install water resistant gypsum backing board.

4. At showers, tubs and similar "wet" areas, install water-resistant backing boards. Apply with un-cut long edge at bottom of work, and space 1/4 inch (6 mm) above fixture lips. Seal ends, cut-edges and penetrations of each piece with water-resistant adhesive.

5. Acoustical Tile Base: Where gypsum board is base for adhesively-applied acoustical tile, install gypsum backing board.

6. Provide either V-joint type backing board or tape-and-compound treatment of joints (2 coats unsanded).

B. **Double-Layer Application:** Install gypsum backing board for base layer and exposed

gypsum board for face layer.

1. On ceilings: Apply base layer prior to base layer application on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10 inches (250 mm). Apply base layers at right angles to supports unless otherwise indicated.

2. On partition/walls: Apply base layer and face layers vertically (parallel) with joints of base layer over supports and face layer joints offset at least 10 inches (250 mm) with base layer joints.

C. **Single-Layer Fasteuing Methods:** Apply gypsum boards to supports as follows:

1. Fasten with screws
2. Fasten to wood supports with adhesive and supplementary screws

D. **Double-Layer Fastening Methods:** Apply base layer of gypsum board and face layer to base layer as follows:

1. Fasten both base layers and face layers separately to supports with screws.

2. Fasten base layers with screws and face layer with adhesive and supplementary fasteners.

3. Fasten base layers to wood supports with nails and face layer with adhesive and supplementary fasteners.

3.5 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

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A. **General:** Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges in accordance with manufacturer's instructions and recommendations.

1. Install corner beads at external corners of drywall work.

2. Install edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

3. Install semi-finishing trim where indicated, and where exterior gypsum board edges are not covered by applied moldings or indicated to receive trim with face flanges covered with joint compound.
4. Install edge trim where indicated on wall panels at juncture with ceilings.

5. Install control joint (beaded-type) where indicated.

3.6 INSTALLATION OF DRYWALL FINISHING:

A. **General:** Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.

1. Apply joint tape at joints between gypsum boards, except where a trim accessory is

indicated.

2. Apply joint compound in 3 coats (not including prefill of openings in base), and sand or sponge between last 2 coats and after last coat.

B. **Base for Acoustical Tile:** Where gypsum board is indicated as a base for adhesively-applied acoustical tile, install tape and 2-coat compound treatment, without sanding.

C. **Water-Resistant Gypsum Backing Board Base for Ceramic Tile:** Comply with recommendations of gypsum backing board manufacturer for treatment of joints behind ceramic tile.

D. **Regular Gypsum Board Base for Ceramic Tile:** In areas to be tiled using organic adhesive, tape joints and apply 4 inch (100 mm) wide coat of joint compound.

E. **Partial Finishing:** Omit third coat (if specified) and sanding on concealed drywall work which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

1. Refer to sections on painting, coatings and wall-coverings in Division-9 for decorative finishes to be applied to drywall work.

3.7 PROTECTION OF WORK:

A. **Provide final protectiou** and maintain conditions, in a manner suitable to Installer, which ensures gypsum board work being without damage or deterioration at time of substantial completion.

"NOT FOR BIDDING"

3.8 CLEANING AND DECONTAMINATION:

A. **At completion** of all work clean and decontaminate the work area in accordance with Section 01712 - Cleaning and Decontamination Procedures

B. **At completion** of all work clean and decontaminate the Work Area in accordance with Section 01711 - Project Decontamination

END OF SECTION - 09251

SECTION 09805 - ENCAPSULATION OF ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 DESCRIPTION OF WORK:

A. **The Extent of encapsnlation work** is shown on the drawings and as herein specified.

1. The work includes encapsulating all exposed building materials in the work area subsequent to a final visual inspections. All block wall penetrations will receive an encapsulation treatment.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. **Asbestos abatement project requirements** to be completed prior to start of the work of this section are set forth in the following sections:

1. 01503 Temporary Facilities - Asbestos Abatement
2. 01513 Temporary Pressure Differential & Air Circulation System
3. 01526 Temporary Enclosures
4. 01560 Worker Protection - Asbestos abatement
5. 01562 Respiratory Protection
6. 01565 Decontamination Units

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B. **Asbestos abatement project requiremeuts** to be completed at completion of the work of this section are set forth in the following sections:

1. 01711 Project Decontamination

1.4 DEFINITIONS:

A. "Encapsulant" :A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.

1. Bridging encapsulant: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
2. Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
3. Removal encapsulant: a penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather than for in situ encapsulation.

B. "Encapsulation": Treatment of asbestos-containing materials, with an encapsulant. Application of a sealer to a substrate following completion of removal of ACM is not considered encapsulation.

1.5 SUBMITTALS:

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

B. **Installation Instructions:** Submit manufacturer's installation instructions with specific project requirements noted.

C. **Performance Warrantee:** Submit manufacturer's performance guarantee.

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

E. **Before Start of Work** submit the following to the Designer for review. Do not begin work until these submittals are returned with the Designer's action stamp indicating that the submittal has been' "Received - Not Reviewed."

1. Material Safety Data Sheet: Submit Material Safety Data Sheets, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for the following:

   a. Surfactants.
   b. Encapsulants.

1.6 DELIVERY AND STORAGE:

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A. **Deliver materials** to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material
2. Manufacturer's stock number and date of manufacture
3. Manufacturer's name
4. Thinning instructions
5. Application instructions

B. **Deliver materials** together with a copy of the OSHA Material Safety Data Sheet for the material.

1.7 JOB CONDITIONS:

A. **Apply encapsulating materials** only when environmental conditions in the work area are as required by the manufacturer's instructions.

1.8 QUALITY ASSURANCE:

A. **Installation of Spray-On Encapsulation Materials:** Install spray-on materials by a firm and personnel approved by the manufacturer of the primary materials.

B. **Testing:** Test material to be encapsulated using methods set forth in ASTM Proposed Specification P-189 "Specification for Encapsulants for Friable Asbestos Containing Building Materials".

C. **Performance Warranty:** Submit written Performance Warranty, executed by the manufacturer and co-signed by the contractor, agreeing to repair/replace spray-on work

which has cracked, fallen from substrate, or otherwise deteriorated to a condition where it would not perform effectively for its intended purposes due substantially to defective materials or workmanship and not due to abuse by occupants, improper maintenance, unforeseeable ambient exposures or other causes beyond anticipated conditions and manufacturer's /contractor's control.

1. Warranty period is____years after date of substantial completion.

D. **Mock-np:** Prior to commencement of work, provide a sample area of encapsulation for approval, 10 feet by 10 feet (3 m by 3 m) in size. The approved mock-up shall serve as a standard for the balance of the encapsulation work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. **Encapsulants:** Provide penetrating or bridging type encapsulants specifically designed for application to ACM.

1. Draft Standards: Product shall be rated as acceptable for use intended when field tested in accordance with ASTM Proposed Specification P-189 "Specification for Encapsulants for Friable Asbestos Containing Building Materials".

2. Fire Safety: Use only materials that have a flame spread index of less than 25, when dry, when tested in accordance with ASTM E-84.

"NOT FOR BIDDING"

2.2 MANUFACTURERS:

A. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

B. **Manufacturer:** Subject to compliance with requirements, provide products of one of the following:

1. Penetrating Encapsulants:

2. Bridging Encapsulants:

PART 3 - EXECUTION

3.1 GENERAL:

A. **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 installation to support the sealant, request direction from the Designer before proceeding with the encapsulating work.

B. **Do Not Commence Application** of encapsulating materials until all removal work within the work area has been completed.

3.2 WORKER PROTECTION:

A. **Before beginning work** with any material for which a Material Safety Data Sheet has been submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

B. **In addition** to protective breathing equipment required by OSHA requirements or by this specification, use painting pre-filters on respirators to protect the dust filters when organic solvent based encapsulant are in use.

3.3 SCRATCH COAT PLASTER:

A. **Apply two (2) coats of encapsulant** to the scratch coat plaster after all ACM has been removed. Apply in strict accordance with the manufacturer's printed instructions for use of the encapsulant as an asbestos coating. Any deviations from such printed instructions must be approved by the Designer in writing prior to commencing work.

1. Apply encapsulant with an airless spray gun with air pressure and nozzle orifice as recommended by the encapsulant manufacturer.
2. Apply the first coat encapsulant while the scratch coat is still damp from the asbestos removal procedures. If the surface has been permitted to dry, vacuum surface with a HEPA filtered vacuum cleaner prior to spraying with the encapsulant.
3. Apply second coat over first coat in strict conformance with manufacturer's instructions.
4. **Color the encapsulant contrasting colors** in alternate coats so that visual confirmation of complete and uniform coverage of each coat is possible. Adhere to manufacturer's instructions for coloring. At the completion of work the encapsulated surface must be a uniform third color produced by the mixture.

"NOT FOR BIDDING"

3.4 SEALING EXPOSED EDGES:

A. **Seal edges of ACM** exposed by removals up to an inaccessible spot such as a sleeve, wall penetration, etc. with two (2) coats of encapsulant.

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

2. Color the encapsulant contrasting colors in alternate coats so that visual confirmation of complete and uniform coverage of each coat is possible. Adhere to manufacturer's instructions for coloring. At the completion of work the encapsulated surface must be a uniform third color produced by the mixture.

3.5 ARCHITECTURAL FINISH AND FIREPROOFING:

A. **Examine Existing Conditions:** Determine if the friable ACM to be encapsulated remains sufficiently bonded to receive the encapsulation process and if encapsulation process will effectively prevent release of asbestos fibers from the material. If the existing

ACM is loose and deteriorated, the Contractor must immediately notify the Designer that removal of friable ACM must be accomplished before encapsulation.

B. **Encapsulants used on fireproofing materials** must have an Underwriters Laboratories classification and be listed in the current edition of the UL Fire Resistance Directory.

C. **Before start of work** on an architectural finish complete the work of the following:
   1. Section 01560 Worker Protection - Asbestos Abatement
   2. Section 01562 Respiratory Protection
   3. Section 01526 Temporary Enclosures
   4. Section 01563 Decontamination Units

D. **Comply with all manufacturer's instructions** for particular conditions of installation in each case. Consult with manufacturer's technical representative for conditions not covered.

E. **Encapsulate all surfaces** in full compliance with manufacturer's procedures.

F. **At completion of Encapsulation** and before removal of Work Area enclosures and Pressure Differential System, decontaminate space in accordance with requirements of section 01711.

G. **At completion of work** submit manufacturer's record of inspection of completed work and Manufacturer's Performance Guarantee executed by both manufacturer and Contractor.

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3.6 DRYING ENCAPSULATED SURFACES

A. **General:** Following encapsulation work allow the HEPA filtered fan units to operate for a sufficient length of time that all encapsulated surfaces dry thoroughly. Use oscillating fans as necessary to assure circulation of air in all parts of the work area during this period. During period of drying operate Temporary Pressure Differential & Air Circulation System as and Exhaust System to as great an extent as possible.

B. **For encapsulation projects** do not start the work of Section 01711 "Project Decontamination" until all encapsulated surfaces are completely dry.

END OF SECTION - 09805

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APPENDIX A

Professional Firm Licenses: Business, Professional Service Firm, Project Designer, Building Inspector, and Project Monitor

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STATE OF DELAWARE

THIS CERTIFIES THAT

Envirotech Environmental Consulting, Inc.

Has satisfactorily completed the requirements prescribed by the Office of Management & Budget as a Asbestos Abatement Professional Service Firm this

Twelfth Day of March Two Thousand Eighteen

This certification is valid for one (1) year to perform asbestos services within the State of Delaware.

This certification shall be proof that the above named Contractor has met the minimum requirements established by the State of Delaware for temporary certification. It is not intended as an overall endorsement of the Contractor's ability to provide services of varying size and shape. It does not endorse the methods and types of respiratory protection used by the Contractor.

Contractor's Address: 17605 Nassau Commons Blvd
Unit D
Lewes, DE 19958

Expiration Date: March 12, 2019

Certification Number: PS-164

Director
Division of Facilities Management

"NOT FOR BIDDING"

LICENSE NO. 2002101696 DORBL

POST CONSPICUOUSLY

STATE OF DELAWARE
DIVISION OF REVENUE

VALID
01/01/18 - 12/31/20
NOT TRANSFERABLE

DLN: 17 95163 06

BUSINESS CODE 099
GROUP CODE 007

LICENSED ACTIVITY PROFESSIONAL AND/OR PRSL SRVCS-UNCLASSIFIED
PROFESSIONAL AND/OR PERSONAL SERVICES

DATE ISSUED: 11/14/17

VALIDATED

2020

LICENSE FEE: $ 225.00

MAILING ADDRESS

BUSINESS LICENSE

BUSINESS LOCATION

ENVIROTECH ENVRMNTL CONSULTING
17605 NASSAU COMMONS BLVD UNIT D
LEWES DE 19958-6284

ENVIROTECH ENVRMNTL CONSULTING
17605 NASSAU COMMONS BLVD UNIT D
LEWES DE 19958-6284

IS HEREBY LICENSED TO PRACTICE, CONDUCT OR ENGAGE IN THE OCCUPATION OR BUSINESS ACTIVITY INDICATED ABOVE IN ACCORDANCE WITH THE LICENSE APPLICATION DULY FILED PURSUANT TO TITLE 30, DEL CODE.

JENNIFER R. HUDSON
DIRECTOR OF REVENUE

IMPORTANT - TEAR AT ABOVE PERFORATION AND DISPLAY IN A PUBLIC LOCATION

Federal E.I. No. or Social Security Number 1 30000 4735 001

Business Code 099
Group Code 007

Licensed Activity PROFESSIONAL AND/OR PRSL SRVCS-UNCLASSIFIED
PROFESSIONAL AND/OR PERSONAL SERVICES

The State of Delaware Business License printed above must be posted in a public area at the location address listed. If you have any questions regarding this license, please call (302) 577-8778.

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REPLACEMENT LICENSES

Keep this portion of your license separate, in case you need a replacement for any lost, stolen or destroyed license. A $15 fee will be charged for the replacement of a license. Send the $15 along with a copy of this form or provide your Federal Employer Identification Number, or Social Security Number, suffix, Business Code, Business Name and address to Delaware Division of Revenue, Attn.: Business Master File, PO Box 8750, Wilmington, DE 19899-8750. You will receive your replacement license within three to four weeks.

OTHER IMPORTANT INFORMATION

Most licensees are also required to pay either gross receipts or excise taxes in addition to the license fee. You can file these taxes online or obtain a paper form from our website at www.revenue.delaware.gov. You must **submit all business tax returns** filed with the Division of Revenue **under the same identification number.** If you are a sole-proprietor, and have a federal employer identification number, use the employer identification number, not your social security number. Only sole proprietors with no employees are allowed to file under their social security number. Inquiries regarding your coupon booklets to pay withholding, corporate tentative, and Sub Chapter "S" estimated taxes, or to make changes to your name, address, or identification number, should be directed to the Business Master File Unit at **(302) 577-8778.**

INTERNET SITE

The Division of Revenue web address is: www.revenue.delaware.gov. Visit our web site for tax tips, links to telephone numbers, forms that you can download, links to other State agencies, the Delaware Code, the publication "Delaware Guide for Small Business" and lots more. Internet filing of personal income tax returns via the Division of Revenue's website is available. Internet filing for Withholding, Gross Receipts and Corporate Tentative payments is also available.

AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

ANTHONY KONRAD

has met the attendance requirements and successfully completed the course entitled

1-DAY EPA AHERA INSP/MGMT PLANNER REFRESHER

For Accreditation under TSCA Title II

"NOT FOR BIDDING"

10/30/2017	10/30/2017	10/30/2018	STEVE SIERACKI
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***
AIMPR10302017-3	VAAIMPR10302017-3		E. Rush Barnett
Certification No.	***Virginia Certification No.***		***Course Director***

1331 Ashton Road P.O.Box 646 Hanover, MD 21076 P: 410-684-3327 F: 410-684-3724

www.amatraining.com

AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

ANTHONY KONRAD

has met the attendance requirements and successfully completed the course entitled

1-DAY EPA AHERA PROJECT DESIGNER REFRESHER

For Accreditation Under TSCA Title II

"NOT FOR BIDDING"

11/14/2017	11/14/2017	11/14/2018	HERMAN GARCIA
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***
APDR11142017-9	VAAPDR11142017-9		E. Rush Barnett
Certification No.	***Virginia Certification No.***		***Course Director***

1331 Ashton Road P.O.Box 646 Hanover, MD 21076 P: 410-684-3327 F: 410-684-3724

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This is to certify that

ANTHONY KONRAD

has met the attendance requirements and successfully completed the course entitled

1-DAY VIRGINIA PROJECT MONITOR REFRESHER

"NOT FOR BIDDING"

11/20/2017	11/20/2017	11/20/2018	DAVID TRUMAN
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***
VAPMR11202017-10	VAVAPMR11202017-10		E. Rush Barnett
Certification No.	***Virginia Certification No.***		***Course Director***

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AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

TRE ELLIOTT

has met the attendance requirements and successfully completed the course entitled

2-DAY VIRGINIA PROJECT MONITOR

"NOT FOR BIDDING"

04/24/2018 to 04/25/2018	04/25/2018	4/25/2019	STEVE SIERACKI
Course Date	***Exam Date***	***Expiration Date***	***Principal Instructor***
VAPM04242018-2	VAVAPM04242018-2		E. Rush Barnett
Certification No.	***Virginia Certification No.***		***Course Director***

1331 Ashton Road *P.O.Box 646* *Hanover, MD 21076* *P: 410-684-3327* *F: 410-684-3724*

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AEROSOL MONITORING & ANALYSIS, INC.

This is to certify that

TRE ELLIOTT

has met the attendance requirements and successfully completed the course entitled

3-DAY EPA ASBESTOS INSPECTOR

For Accreditation Under TSCA Title II

"NOT FOR BIDDING"

06/11/2018 to 06/13/2018	06/13/2018	6/13/2019	STEVE SIERACKI
Course Date	**Exam Date**	**Expiration Date**	**Principal Instructor**
AI06112018-2			E. Rush Barnett
Certification No.			**Course Director**

1331 Ashton Road P.O.Box 646 Hanover, MD 21076 P: 410-684-3327 F: 410-684-3724

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APPENDIX B

DNREC 10-Day Notification of Demolition and Renovation Form,

DSWA Asbestos Disposal Procedures

"NOT FOR BIDDING"

NOTIFICATION OF DEMOLITION OR RENOVATION				DNREC USE, ONLY
1. FACILITY INFORMATION *(Identify Owner, Removal Contractor, and Certified Professional Service Firm)*				
ner				
Address				
City	County	State	Zip	
Contact		Telephone		
REMOVAL CONTRACTOR				
Address				
City	County	State	Zip	
Site Contact *(Supervisor on-site)*		Telephone		
CERTIFIED PROFESSIONAL SERVICE FIRM				
Address				
City	County	State	Zip	
Site Contact		Telephone		
II. TYPE OF NOTIFICATION? *("O" = "Original" --- "R" = "Revised")*				
III. TYPE OF OPERATION? *("D" = "Demolition" --- "R" = "Renovation")*				
IV. IS ASBESTOS PRESENT? *("Y" = "YES" --- "N" = "NO")*				
V. FACILITY DESCRIPTION *(Include Building Name, number and floor, or room number)*				
Building Name				
Address #1				
Address #2				
City	County	State	Zip	
Site Location				
Building Size: Sq. Meters	Sq. Feet	Number of Floors	Age in Years	
sent Use	Prior Use			

"NOT FOR BIDDING"

VI. PROCEDURE, INCLUDING ANALYTICAL METHOD, IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL (Note: all demolition jobs must have a Survey performed by a Certified Professional Service Firm to ensure that there are no Asbestos-Containing Materials ***("ACM")*** present) (*Definition:* Asbestos-Containing Materials ***("ACM")***: containing > ***1% asbestos***)

VII. APPROXIMATE AMOUNT OF *REGULATED ASBESTOS-CONTAINING MATERIAL ("RACM")* TO BE REMOVED, AND NON-FRIABLE ASBESTOS MATERIAL THAT WILL *NOT* BE REMOVED *(Specify the amount of asbestos below):*

VII. APPROXIMATE AMOUNT OF REGULATED ASBESTOS-CONTAINING MATERIAL ("RACM") TO BE REMOVED, AND NON-FRIABLE ASBESTOS MATERIAL THAT WILL NOT BE REMOVED (Specify the amount of asbestos below):	RACM TO BE REMOVED	NON-FRIABLE ASBESTOS MATERIAL *NOT* TO BE REMOVED	
		CATEGORY I	CATEGORY II
PIPES: Linear Feet			
PIPES: Linear Meters			
SURFACE AREA: **Square Feet**			
SURFACE AREA: Square Meters			
Volume of RACM, off-Facility **Components: Cubic Feet**			
Volume of RACM, off-Facility Components: Cubic Meters			
VIII. SCHEDULED DATES OF ASBESTOS REMOVAL/DEMOLITION/RENOVATION?		Start	Finish
IX. SCHEDULED WORKING HOURS (SHIFT HOURS) (A.M./P.M./etc.)		Start	Finish

NOTIFICATION OF DEMOLITION OR RENOVATION.....*(continued)*

X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(s) TO BE USED

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

XII. WASTE TRANSPORTER #1

Address			
City	County	State	Zip
Contact		Telephone	

WASTE TRANSPORTER #2

Address			
City	County	State	Zip
Contact		Telephone	

XII. WASTE DISPOSAL SITE — EPA Certification Number

Address			
City	County	State	Zip
Contact		**Telephone**	

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

Name	Title
Authority	
Date of Order (MM/DD/YY)	Date Ordered to Begin (MM/DD/YY)

XV. FOR EMERGENCY RENOVATIONS:

"NOT FOR BIDDING"

DATE and HOUR of Emergency: (MM/DD/YY)	(HHMM)

Description of SUDDEN, UNEXPECTED EVENT

Explanation of how the Event caused unsafe conditions, or a serious disruption of industrial operations

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

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

(Signature of Owner/Operator) *(Date)*

XVIII. **I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT**

(Signature of Owner/Operator) *(Date)*

DELAWARE SOLID WASTE AUTHORITY

ASBESTOS POLICY AND PROCEDURES

Effective Date: April 1, 1995 Revised: April 15, 2002

The Department of Natural Resources and Environmental Control *("DNREC")* and the Delaware Solid Waste Authority *("DSWA")* have established the following Policy concerning the handling and disposal of Asbestos-Containing Material *("ACM")*.

ANY TYPE OF ASBESTOS-CONTAINING MATERIAL MAY BE TRANSPORTED TO AN AUTHORIZED ASBESTOS LANDFILL OUT-OF-STATE, OR DISPOSED OF AT AN APPROVED DSWA FACILITY.

Asbestos-Containing Material to be landfilled out of state:

The asbestos material must be packaged in accordance with State of Delaware regnlations or the regulations of other affected states, whichever are the more stringent. Furthermore, the out-of-state destination must be approved by *DNREC*[4] as part of the permitting procedure for a transporter Permit.

"NOT FOR BIDDING"

Asbestos-Containing Material to be landfilled in Delaware:

Friable[1] asbestos material must be wetted, packaged in leak-proof containers and labeled in accordance with *DNREC* regulations. This material may be landfilled at the Northern Solid Waste Management Center, ***only***. The *DSWA* charges a special disposal fee for this material.

Category I ***non-friable*** Asbestos-Containing Material *ACM* and Category II ***non-friable*** Asbestos-Containing Material *ACM* may be landfilled at any of the Delaware Solid Waste Authority Facilities at DSWA's standard disposal fee with the following packaging requirements:

Northern Solid Waste Management Center: Category I ***non-friable*** *ACM*[2] must be wetted and may be removed and transported in covered dumpsters or trucks and landfilled nnpackaged in the designated asbestos disposal area. Category II ***non-friable*** *ACM*[3] must be wetted and packaged in sealed, leakproof clear plastic wrap and labeled as asbestos. At the landfill it must be placed in the designated asbestos disposal area. Disposal of ***bulk*** shipments of Category I & II ***non-friable*** asbestos will be accepted at the Northern Solid Waste Management Center ***only***.

Central and Southern Solid Waste Management Centers: Category II ***non-friable*** *ACM*[3] destined for these Facilities must be wetted and packaged in sealed, leak-proof clear plastic wrap, and labeled as asbestos. At the landfill, it must be placed in a roll-off container specifically dedicated for this purpose. Category I ***non-friable*** *ACM*[2] may be transported to these Facilities *unpackaged* in a covered vehicle, and off-loaded into a roll-off container specifically dedicated for this purpose.

ASBESTOS POLICY AND PROCEDURES

Packaging of Category I, ***non-friable*** *ACM*[2] in the same manner as Category II non-friable *ACM*[3] is preferred but is not required.

In order to be exempt from the packaging requirements, any *ACM* classified and handled as Category I ***non-friable*** *ACM*[2] must be certified as such by a licensed Delaware Certified Professional Service Firm. This certification shall include a description of the material, where the sample originated and the date the material was sampled. This certification must be sent along with the **NOTIFICATION OF DEMOLITION/RENOVATION** to the Department of Natural Resources and Environmental Control. A copy of the Category I, ***non-friable*** *ACM*[2] certification must accompany the material to the landfill. All ACM must be removed by a licensed Delaware Asbestos Abatement Contractor[4], unless a written waiver has been issued by the Department of Natural Resources and Environmental Control, Air Quality Management Section, Engineering and Compliance Branch. A copy of this waiver must accompany the material to the landfill.

"NOT FOR BIDDING"

In addition to the above requirements, disposal of all asbestos material at *DSWA* Facilities is subject to the *DSWA* Asbestos Disposal Procedures, which require at least 24-hour prior notice to the landfill of any deliveries of asbestos.

[1]***Friable*** asbestos material means any material containing more than one (1) percent asbestos, as determined using the method specified in Appendix A, Subpart F, 40 CFR, Part 763, Section 1, *Polarized Light Microscopy*, that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. If the asbestos content is less than ten (10) percent, as determined by a Method other than point-counting by *Polarized Light Microscopy* ("PLM"), verify the asbestos content by point-counting using "PLM."

[2]Category I ***non-friable*** Asbestos-Containing Material ("ACM") means asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing prodncts containing more than one (1) percent asbestos, as determined using the method specified in Appendix A, Subpart F, 40 CFR, Part 763, Section I, *Polarized Light Microscopy*.

[3]Category II ***non-friable*** Asbestos-Containing Material ("ACM") means any material, excluding Category I, ***non-friable*** ACM, containing more than one (1) percent asbestos as determined using the methods

specified in Appendix A, Subpart F, 40 CFR, Part 763, Section I, *Polarized Light Microscopy* ("PLM") that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

NOTE: asphalt/vinyl floor tiles, mastic/adhesive, transite materials and house siding are considered Category II materials.

[4]Homeowners are exempt from this requirement.

Modification Synopsis

March 18, 2002: The Asbestos Policy was modified to allow for the removal of category I non-friable ACM by a general contractor, provided a licensed Delaware certified Professional Service Firm has certified that the material is Category I non-friable ACM. A written waiver would be issued by the Department of Natural Resources and Environmental Control, Air Quality Management Section, Engineering and Compliance Branch to allow for this.

"NOT FOR BIDDING"

APPENDIX C

Certificate of Site Worker's Acknowledgment Form (01560)

Certification of Visual Inspection and Acceptance Inspection Form (01711)

"NOT FOR BIDDING"

MODEL ASBESTOS ABATEMENT GUIDE SPECIFICATION

CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

PROJECT NAME_____DATE_____

PROJECT ADDRESS_____

CONTRACTOR'S NAME_____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You be trained in safe work practices and in the use of the equipment found on the job. You receive a medical examination. These things are to have been done at no cost to you.

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

"NOT FOR BIDDING"

TRAINING COURSE: You must have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. This training must have been the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR Part 763, Subpart E, Appendix C).

MEDICAL EXAMINATION: You must have had a medical examination within the past 12 months at no cost to you. This examination must have included: health history, pulmonary function tests and may have included an evaluation of a chest x-ray.

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

Signature_____Social Security No_____

Printed Name_____Witness_____

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

CERTIFICATION OF VISUAL INSPECTION AND ACCEPTANCE INSPECTION

JOB NAME:

WORK AREA:

CONTRACTOR'S SUPERVISOR CERTIFICATION

In accordance with Section 01711 "Project Decontamination" the Contractor hereby certifies that he has visually inspected the Work Area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, Decontamination Units, sheet plastic, etc.) and has found no dust, debris or residue.

By: (Signature) _____ Date: _____

(Signature) _____ Firm Name: _____

(Print Title) _____

ENVIRONMENTAL FIELD TECHNICIANS CERTIFICATION

"NOT FOR BIDDING"

The Environmental Field Technician hereby certifies that he has accompanied the contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge, and belief, the contractors certifications above is a true and honest one.

By: (Signature) _____ Date: _____

(Signature) _____ Firm Name: _____

(Print Title) _____

PROJECT DESIGNER CERTIFICATION

The Project Designer herby certifies that he has accompanied the contractor on his visual inspection and verifies that this inspection has been through and to the best of his knowledge and belief, the contractors certifications above is a true and honest one.

By: (Signature) _____ Date: _____

(Signature) _____ Firm Name: _____

(Print Title) _____

ENVIROTECH ENVIRONMENTAL CONSULTING, INC.

CERTIFICATION OF VISUAL INSPECTION AND ACCEPTANCE INSPECTION

BUILDING OWNERS'S CERTIFICATION

The Building Owner or Owner's Representative hereby certifies that he/she has accompanied the project designer on a final walk through inspection, and, to the best of their knowledge, is satisfied that the contractor has fulfilled his contractual obligations. All discrepancies identified at this time have been noted in pre-existing conditions, or post clear tear down inspections throughout the project.

By: (Signature) _____ Date: _____

(Signature) _____ Firm Name: _____

(Print Title) _____

PROJECT ADMINISTRATOR CERTIFICATION

The Project Administrator hereby certifies that he has accompanied the Contractor on the Contractor's visual inspection and verifies that this inspection has been through and to the best of their knowledge and belief, the Contractor's Certification above is a true and honest one.

By: (Signature) _____ Date: _____

(Signature) _____ Firm Name: _____

(Print Title) _____

"NOT FOR BIDDING"

APPENDIX D

Asbestos Bulk Sampling Laboratory Analytical Results

"NOT FOR BIDDING"

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 041805697
Customer ID: ENEC42
Customer PO: 0
Project ID:

Attention: Anthony Konrad
Envirotech Environmental Consulting, Inc
17605 Nassau Commons Boulevard
Unit D
Lewes, DE 19958
Project: North Laurel Elementary School, Laurel

Phone: (302) 684-5201
Fax:
Received Date: 02/21/2018 9:15 AM
Analysis Date: 02/23/2018 - 02/24/2018
Collected Date: 02/19/2018

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
HA-1-A 041805697-0001	Classroom 9 - 9"x9" Floor Tile - Tan	Tan Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
HA-1-B 041805697-0002	Classroom 12 - 9"x9" Floor Tile - Tan				Positive Stop (Not Analyzed)
HA-1-C 041805697-0003	Hallway 1 - 9"x9" Floor Tile - Tan				Positive Stop (Not Analyzed)
HA-2-A 041805697-0004	Classroom 9 - 9"x9" Floor Tile Mastic - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-2-B 041805697-0005	Classroom 8 - 9"x9" Floor Tile Mastic - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-2-C 1805697-0006	Classroom 10 - 9"x9" Floor Tile Mastic - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-3-A 041805697-0007	Classroom 9 - Vinyl Baseboard - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-3-B 041805697-0008	Classroom 8 - Vinyl Baseboard - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-3-C 041805697-0009	Classroom 12 - Vinyl Baseboard - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-4-A 041805697-0010	Classroom 9 - Vinyl Baseboard Glue - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-4-B 041805697-0011	Classroom 8 - Vinyl Baseboard Glue - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-4-C 041805697-0012	Classroom 12 - Vinyl Baseboard Glue - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-5-A 041805697-0013	Classroom 9 - 1'x1' Ceiling Tile - White/ Gray	Gray/White Fibrous Homogeneous	10% Cellulose 80% Min. Wool	10% Non-fibrous (Other)	None Detected
HA-5-B 041805697-0014	Classroom 8 - 1'x1' Ceiling Tile - White/ Gray	Gray/White Fibrous Homogeneous	10% Cellulose 80% Min. Wool	10% Non-fibrous (Other)	None Detected
HA-5-C 041805697-0015	Classroom 10 - 1'x1' Ceiling Tile - White/ Gray	Gray/White Fibrous Homogeneous	10% Cellulose 80% Min. Wool	10% Non-fibrous (Other)	None Detected
HA-6-A 805697-0016	Classroom 9 - Window Countertop - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

"NOT FOR BIDDING"

Initial report from: 02/24/2018 14:47:43

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041805697
Customer ID:	ENEC42
Customer PO:	0
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
HA-6-B *041805697-0017*	Classroom 8 - Window Countertop - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-6-C *041805697-0018*	Classroom 10 - Window Countertop - Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-7-A *041805697-0019*	Classroom 9 - Pipe Insulation - White	White Fibrous Homogeneous		80% Non-fibrous (Other)	15% Amosite 5% Crocidolite
HA-7-B *041805697-0020*	Classroom 8 - Pipe Insulation - White				Positive Stop (Not Analyzed)
HA-7-C *041805697-0021*	Classroom 12 - Pipe Insulation - White				Positive Stop (Not Analyzed)
HA-8-A *041805697-0022*	Hallway 1; Trophy Case - Glue Dots - Brown	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-8-B *041805697-0023*	Hallway 1; Trophy Case - Glue Dots - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-8-C *041805697-0024*	Hallway 1; Trophy Case - Glue Dots - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-9-A *041805697-0025*	Hallway 1 - 2'x2' Ceiling Tile - White	Tan/White Fibrous Homogeneous	50% Cellulose 30% Min. Wool	20% Non-fibrous (Other)	None Detected
HA-9-B *041805697-0026*	Lobby - 2'x2' Ceiling Tile - White	Tan/White Fibrous Homogeneous	50% Cellulose 30% Min. Wool	20% Non-fibrous (Other)	None Detected
HA-9-C *041805697-0027*	Hallway 2 - 2'x2' Ceiling Tile - White	Tan/White Fibrous Homogeneous	50% Cellulose 30% Min. Wool	20% Non-fibrous (Other)	None Detected
HA-10-A *041805697-0028*	Classroom 8 - 9"x9" Floor Tile - Gray	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
HA-10-B *041805697-0029*	Classroom 10 - 9"x9" Floor Tile - Gray				Positive Stop (Not Analyzed)
HA-10-C *041805697-0030*	Storage / Classroom - 9"x9" Floor Tile - Gray				Positive Stop (Not Analyzed)
HA-11-A *041805697-0031*	Classroom 8 - Plaster - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-11-B *041805697-0032*	Classroom 10 - Plaster - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-11-C *041805697-0033*	Classroom 16 - Plaster - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-12-A *041805697-0034*	Faculty Lounge - 9"x9" Floor Tile - Pink	Pink Non-Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
HA-12-B *041805697-0035*	Classroom 17 - 9"x9" Floor Tile - Pink				Positive Stop (Not Analyzed)

"NOT FOR BIDDING"

Initial report from: 02/24/2018 14:47:43

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041805697
Customer ID:	ENEC42
Customer PO:	0
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
HA-12-C *041805697-0036*	Classroom 17 Vestibule - 9"x9" Floor Tile - Pink				Positive Stop (Not Analyzed)
HA-13-A *041805697-0037*	Faculty Lounge - 9"x9" Floor Tile Mastic - Black	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
HA-13-B *041805697-0038*	Classroom 17 - 9"x9" Floor Tile Mastic - Black				Positive Stop (Not Analyzed)
HA-13-C *041805697-0039*	Classroom 17 Vestibule - 9"x9" Floor Tile Mastic - Black				Positive Stop (Not Analyzed)
HA-14-A-Vinyl Baseboard *041805697-0040*	Guidance Office - Vinyl Baseboard - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-14-A-Mastic *041805697-0040A* *Recommend TEM.*	Guidance Office - Mastic	Brown/Yellow Non-Fibrous Homogeneous	2% Fibrous (Other)	98% Non-fibrous (Other)	None Detected
HA-14-B-Vinyl Baseboard *041805697-0041*	Faculty Lounge - Vinyl Baseboard - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-14-B-Mastic *041805697-0041A* *Limited material.*	Faculty Lounge - Mastic	Brown/Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
HA-14-C-Vinyl Baseboard *041805697-0042*	Classroom 17 Vestibule - Vinyl Baseboard - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-14-C-Mastic *041805697-0042A* *Limited material.*	Classroom 17 Vestibule - Mastic	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
HA-15-A-Vinyl Baseboard *041805697-0043*	Guidance Office - Vinyl Baseboard - Yellow/ Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-15-A-Mastic *041805697-0043A*	Guidance Office - Mastic	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-15-B-Vinyl Baseboard *041805697-0044*	Faculty Lounge - Vinyl Baseboard - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-15-B-Mastic *041805697-0044A*	Faculty Lounge - Mastic	Brown Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
HA-15-C-Vinyl Baseboard *041805697-0045*	Classroom 17 Vestibule - Vinyl Baseboard - Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-15-C-Mastic *041805697-0045A*	Classroom 17 Vestibule - Mastic				Positive Stop (Not Analyzed)

"NOT FOR BIDDING"

Initial report from: 02/24/2018 14:47:43

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	041805697
Customer ID:	ENEC42
Customer PO:	0
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
HA-16-A *041805697-0046*	Guidance Office - Carpet Glue - Yellow	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-16-B *041805697-0047*	Guidance Office - Carpet Glue - Yellow	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-16-C *041805697-0048*	Guidance Office - Carpet Glue - Yellow	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
HA-17-A *041805697-0049*	Hallway 1 Custodial Closet - Pipe Fitting - White	White Fibrous Homogeneous	20% Cellulose 30% Min. Wool	47% Non-fibrous (Other)	3% Chrysotile
HA-17-B *041805697-0050*	Custodial Equipment Room - Pipe Fitting - White				Positive Stop (Not Analyzed)
HA-17-C *041805697-0051*	Hallway 1 Custodial Closet - Pipe Fitting - White				Positive Stop (Not Analyzed)

"NOT FOR BIDDING"

Analyst(s)
John Flanagan (12)
Natalia Dispensa (32)

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported 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. 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. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from: 02/24/2018 14:47:43

OrderID: 041805697

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 041805697

EMSL ANALYTICAL, INC.
200 ROUTE 130
CINNAMINSON, NJ 08077
PHONE: (856) 858-4800
FAX: (856) 858-4960

RECEIVED EMSL CINNAMINSON, NJ 2018 FEB 20 AM 10:17

Company : Envirotech Environmental Consulting, Inc.	EMSL-Bill to: ☒ Same ☐ Different If Bill to is Different note instructions/comments:** *Third Party Billing requires written authorization from third party*
Street: 17605 Nassau Commons Boulevard, Unit D	
City: Lewes / State/Province: DE	Zip/Postal Code: 19958 / Country: USA
Report To (Name): Anthony Konrad	Fax #: 302-684-5204
Telephone #: 302-684-5201	Email Address: anthonyk@envirotechecinc.com
Project Name/Number: North Laurel Elementary School, Laurel	
Please Provide Results: ☐ Fax ☒ Email / Purchase Order:	U.S. State Samples Taken: DE

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ☐ 24 Hrs ☐ 48 Hrs ☒ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

*For TEM Air 3 hours/6 hours, 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.

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10um ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐ [illegible]

"NOT FOR BIDDING"

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

Samplers Name: Anthony Konrad | Samplers Signature: [signature]

Sample #	Sample Description	~~Volume/Area (Air)~~ HA # (Bulk)	Date/Time Sampled
HA-1-A	9"x9" Floor Tile - Classroom 9	Tan	2-19-18
HA-1-B	9"x9" Floor Tile - Classroom 12	Tan	2-19-18
HA-1-C	9"x9" Floor Tile - Hallway 1	Tan	2-19-18
HA-2-A	9"x9" Floor Tile Mastic- Classroom 9	Black	2-19-18
HA-2-B	9"x9" Floor Tile Mastic- Classroom 8	Black	2-19-18
HA-2-C	9"x9" Floor Tile Mastic- Classroom 10	Black	2-19-18
HA-3-A	Vinyl Baseboard - Classroom 9	Black	2-19-18
HA-3-B	Vinyl Baseboard - Classroom 8	Black	2-19-18

Client Sample # (s): HA-1-A - HA-17-C Total # of Samples: 51

Relinquished (Client): [signature] Date: 2/20/18 Time: 1700

Received (Lab): [signature] Date: 2-21-18 Time: 9:15

Comments/Special Instructions:

OrderID: 041805697

EMSL ANALYTICAL, INC.
LABORATORY•PRODUCTS•TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*:

041805697

RECEIVED
EMSL
CINNAMINSON, NJ
18 FEB 21 AM 10: 17

PHONE:
FAX:

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

Sample #	Sample Description	~~Volume/Area (Air)~~ ~~HA # (Bulk)~~	Date/Time Sampled
HA-3-C	Vinyl Baseboard - Classroom 12	Black	2-19-18
HA-4-A	Vinyl Baseboard Glue - Classroom 9	Brown	2-19-18
HA-4-B	Vinyl Baseboard Glue - Classroom 8	Brown	2-19-18
HA-4-C	Vinyl Baseboard Glue - Classroom 12	Brown	2-19-18
HA-5-A	1'x1' Ceiling Tile - Classroom 9	White/Gray	2-19-18
HA-5-B	1'x1' Ceiling Tile - Classroom 8	White/Gray	2-19-18
HA-5-C	1'x1' Ceiling Tile - Classroom 10	White/Gray	2-19-18
HA-6-A	Window Coutertop - Classroom 9	Black	2-19-18
HA-6-B	Window Coutertop - Classroom 8	Black	2-19-18
HA-6-C	Window Coutertop - Classroom 10	Black	2-19-18
HA-7-A	Pipe Insultation - Classroom 9	White	2-19-18
HA-7-B	Pipe Insultation - Classroom 8	White	2-19-18
HA-7-C	Pipe Insultation - Classroom 12	White	2-19-18
HA-8-A	Glue Dots - Hallway 1; Trophy Case	Brown	2-19-18
HA-8-B	Glue Dots - Hallway 1; Trophy Case	Brown	2-19-18
HA-8-C	Glue Dots - Hallway 1; Trophy Case	Brown	2-19-18

*Comments/Special Instructions: Positive Stop.

"NOT FOR BIDDING"

Controlled Document – Asbestos COC – R1 – 3/18/2009

EMSL ANALYTICAL, INC.
LABORATORY•PRODUCTS•TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 041805697

RECEIVED EMSL CINNAMINSON, NJ 18 FEB 21 AM 10: 17

PHONE:
FAX:

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

Sample #	Sample Description	~~Volume/Area (Air) HA # (Bulk)~~	Date/Time Sampled
HA-9-A	2'x2' Ceiling Tile - Hallway 1	White	2-19-18
HA-9-B	2'x2' Ceiling Tile - Lobby	White	2-19-18
HA-9-C	2'x2' Ceiling Tile - Hallway 2	White	2-19-18
HA-10-A	9"x9" Floor Tile - Classroom 8	Gray	2-19-18
HA-10-B	9"x9" Floor Tile - Classroom 10	Gray	2-19-18
HA-10-C	9"x9" Floor Tile - Storage/Classroom	Gray	2-19-18
HA-11-A	Plaster - Classroom 8	Brown	2-19-18
HA-11-B	Plaster - Classroom 10	Brown	2-19-18
HA-11-C	Plaster - Classroom 16	Brown	2-19-18
HA-12-A	9"x9" Floor Tile - Faculty Lounge	Pink	2-19-18
HA-12-B	9"x9" Floor Tile - Classroom 17	Pink	2-19-18
HA-12-C	9"x9" Floor Tile - Classroom 17 Vestibule	Pink	2-19-18
HA-13-A	9"x9" Floor Tile Mastic - Faculty Lounge	Black	2-19-18
HA-13-B	9"x9" Floor Tile Matic - Classroom 17	Black	2-19-18
HA-13-C	9"x9" Floor Tile Mastic - Classroom 17 Vestibule	Black	2-19-18
HA-14-A	Vinyl Baseboard - Guidance Office	Brown	2-19-18

*Comments/Special Instructions: Positive Stop.

"NOT FOR BIDDING"

Page 3 of 4 pages

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*:

041805697

RECEIVED EMSL CINNAMINSON, NJ 18 FEB 21 AM 10: 17

PHONE:
FAX:

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

Sample #	Sample Description	~~Volume/Area (Air) HA # (Bulk)~~	Date/Time Sampled
HA-14-B	Vinyl Baseboard - Faculty Lounge	Brown	2-19-18
HA-14-C	Vinyl Baseboard - Classroom 17 Vestibule	Brown	2-19-18
HA-15-A	Vinyl Baseboard - Guidance Office	Yellow/Brown	2-19-18
HA-15-B	Vinyl Baseboard - Faculty Lounge	Brown	2-19-18
HA-15-C	Vinyl Baseboard - Classroom 17 Vestibule	Brown	2-19-18
HA-16-A	Carpet Glue - Guidance Office	Yellow	2-19-18
HA-16-B	Carpet Glue - Guidance Office	Yellow	2-19-18
HA-16-C	Carpet Glue - Guidance Office	Yellow	2-19-18
HA-17-A	Pipe Fitting - Hallway 1 Custodial Closet	White	2-19-18
HA-17-B	Pipe Fitting - Custodail Equipment Room	White	2-19-18
HA-17-C	Pipe Fitting - Hallway 1 Custodial Closet	White	2-19-18

"NOT FOR BIDDING"

*Comments/Special Instructions: Positive Stop.

Page 1 of 4 pages

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 041827452
Customer ID: ENEC42
Customer PO: 0
Project ID:

Attention: Anthony Konrad
Envirotech Environmental Consulting, Inc
17605 Nassau Commons Boulevard
Unit D
Lewes, DE 19958
Project: NLES-West Corridor (Original)-Laurel

Phone: (302) 684-5201
Fax:
Received Date: 09/11/2018 9:30 AM
Analysis Date: 09/12/2018
Collected Date: 09/07/2018

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
HA-1-A *041827452-0001*	Classroom 1 - Blackboard Glue Dot	Black Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
HA-1-B *041827452-0002*	Classroom 4 - Blackboard Glue Dot				Positive Stop (Not Analyzed)
HA-1-C *041827452-0003*	Classroom 5 - Blackboard Glue Dot				Positive Stop (Not Analyzed)

"NOT FOR BIDDING"

Analyst(s)
Daniel Fricker (1)

Benjamin Ellis, 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. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from: 09/12/2018 11:48:12

OrderID: 041827452

EMSL ANALYTICAL, INC.
LABORATORY•PRODUCTS•TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 041827452

EMSL ANALYTICAL, INC.
200 ROUTE 130
CINNAMINSON, NJ 08077
PHONE: (856) 786-0600
FAX: (856) 858-4960

RECEIVED EMSL CINNAMINSON, NJ 18 SEP 17 AM 9:37

Company : Envirotech Environmental Consulting, Inc.	EMSL-Bill to: ☒ Same ☐ Different If Bill to is Different note instructions in Comments*
Street: 17605 Nassau Commons Boulevard, Unit D	*Third Party Billing requires written authorization from third party*
City: Lewes / State/Province: DE	Zip/Postal Code: 19958 / Country: USA
Report To (Name): Anthony Konrad	Fax #: 302-684-5204
Telephone #: 302-684-5201	Email Address: anthonyk@envirotechecinc.com
Project Name/Number: NLES - West Corridor (Original) - Laurel	
Please Provide Results: ☐ Fax ☒ Email / Purchase Order:	U.S. State Samples Taken: DE

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ☒ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

**For TEM Air 3 hours/6 hours, 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.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☒ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other

"NOT FOR BIDDING"

☒ Check For Positive Stop – Clearly Identify Homogenous Group

Samplers Name: Tre Elliott | Samplers Signature: Tre Elliott

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
HA-1-A	Blackbooard Glue Dot - Classroom 1	Black	9-7-18
HA-1-B	Blackbooard Glue Dot - Classroom 4	Black	9-7-18
HA-1-C	Blackbooard Glue Dot - Classroom 5	Black	9-7-18

Client Sample # (s): HA-1-A - HA-1-C Total # of Samples: 3 (3CW)

Relinquished (Client): Tre Elliott Date: 9-10-18 Time: 1700

Received (Lab): CW Date: 9-11-18 Time: 9:30

Comments/Special Instructions: Positive Stop