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A S B E S T O S A B A T E M E N T
I N V I T A T I O N F O R B I D
I F B #  2 0 1 7 0 2 - A A
Invitation for Bid
for Asbestos Abatement Services for
Highland Park Independent School District
7015 Westchester Drive
Dallas, TX, 75205

The Highland Park Independent School District is seeking bids from vendors for the abatement of asbestos-containing material (ACM) at University Park Elementary School, located at 3505 Amherst Avenue, Dallas, TX 75205.

There will be a MANDATORY pre-bid meeting on March 10, 2017 at 4:00 PM at University Park Elementary School in the Cafeteria.

Questions
Questions regarding this proposal request, or the services requested, will be accepted in email form only, to WitcheM@hpisd.org, on or before 10:00 am on March 15, 2017. Responses to all material questions submitted will be communicated in writing by email to all known interested parties by 10:00 am on March 15, 2017.

Bid Submission
To be eligible for consideration under this request, the vendor must submit three complete paper copies of their bid by 10:00 am CST on March 27, 2017 to the address below. The district will not accept bids received after that time. Late submissions to the district address will be returned unopened. No electronic submissions can be accepted.

The bid must be submitted in a sealed envelope or packet marked “Asbestos Abatement.” Bids must be delivered to:

Mary Witcher, Purchasing Coordinator
6915 Westchester Drive
Dallas, TX 75205

Bids will be opened publicly at 10:00 AM on March 27, 2017 with prices and submittor names read aloud in office of the Purchasing Coordinator, at the address listed above.

Evaluation Process
The district will use the following criteria to evaluate the proposal and award the contract:

80 % - Cost of services
20 % - Successful completions of similar projects

The district reserves the right to reject any or all proposals and to accept the proposal the district considers most advantageous. If any portion or provision of this proposal and any contract between the contractor and district entered into is invalid, the remainder, at the option of the district, must remain in full force and effect and not be affected.


**Schedule for Selection Process**
The district will make every effort to adhere to the following schedule:

- **03/01/2017** Posting of Invitation for Bid (IFB)
- **03/02/2017** Ad #1
- **03/09/2017** Ad #2
- **03/15/2017** Deadline for questions concerning the IFB or services requested – 10 AM

**03/11-03/19/2017** HPISD closed for Spring Break

- **03/20/2017** Responses given to any questions provided to all known interested parties
- **03/27/2017** Deadline for sealed bid submission – 10 AM
- **04/11/2017** District Board award of contract (vendors notified on 4/12/2017)

**District Rights**
The district reserves the right to:
- waive any defect, irregularity, or informality in the proposal or proposal procedures;
- reject any and all proposals;
- accept any proposal or portion thereof most advantageous to the district;
- request additional information or require a meeting with vendor representatives for clarification;
- cancel, revise, or reissue this request for proposal or any portions of it,
- negotiate any conditions;
- retain all other provisions even if any provision of the proposal is determined invalid;
- modify deadlines; and
- select any proposal considered to be in its best interest as determined by the district.

**Specifications**
Please see the attached document from EcoSystems Environmental, Inc for the Asbestos Abatement Project Design Specifications. (begins on page 4)

**Bid Form**
Please attach your bid on your company letterhead to your submission.

**END OF BID DOCUMENT. SEE NEXT PAGE FOR SPECIFICATIONS.**
ASBESTOS ABATEMENT PROJECT DESIGN

University Park Elementary School
Pre-Demolition Asbestos Abatement
3505 Amherst Avenue
Dallas, Texas  75225

ESEI PROJECT NUMBER 17011122

February 28, 2017
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INSTRUCTIONS TO PROPOSERS

1. USE OF PROPOSAL FORMS

These Documents include a complete set of Proposal Forms, which are for the convenience of Proposers.

1.1 The abatement of Asbestos Containing Material (ACM) as indicated on the reference drawings prior to the demolition of the University Park Elementary School.

2. PROPOSER’S REPRESENTATIONS

The Proposer, by submitting a Proposal represents that:

a) The Proposer has read and understands the Proposal Documents and the Proposal is made in accordance therewith.

b) The Proposer has read and understands the Proposal Documents for this project(s) and has related this project(s) to other work that has been Proposed or that currently may be under progress at the same site.

c) The Proposer has visited the site(s), become familiar with local conditions under which the work is to be performed, and has correlated the Proposer’s personal observations with the requirements of the proposed Contract Documents.

d) The Proposal is based on the materials, equipment and systems required by the Proposal Documents without exception.

3. PROPOSAL PROCEDURES

To be considered, Proposals must comply with these Instructions to Proposers:

a) All Proposals must be submitted on forms supplied by Owner and shall be subject to all requirements of the Contract Documents, including the Reference Drawings, and these Instructions to Proposers. All Proposals must be regular in every respect and no interlineations, excisions or special conditions shall be made or included in the Proposal Form by the Proposer.

b) Proposals shall be submitted as directed in the Invitation For Bids (IFB) No. 201702-AA.

c) Proposals shall be publicly opened at the time, date, and location indicated in IFB No. 201702-AA. Any Proposal received after that time shall not be considered and will be returned unopened.

d) Oral, telegraphic, faxed, or telephonic Proposals will not be considered.

e) Each Proposer agrees in submitting his Proposal that no modifications, withdrawals or cancellations may be made by the Proposer during the sixty-days following the date on which the Proposals are opened.

f) All blanks on the Proposal form(s) shall be filled in by typewriter or manually in ink. Alterations or erasures must be initialed by the signer of the Proposal.
g) Where sums are expressed in both words and figures, the amount written in words shall govern if any discrepancy exists between the two.

h) RESERVED

i) Each Proposer shall include in his Proposal the following information:

- Principals
- Names
- Home Addresses, including City, State and Zip Code

- Firm
- Name
- Address
- City, State, and Zip Code
- Telephone Number

j) Each copy of the Proposal shall bear the legal name of the Proposer and be signed by a person legally authorized to bind the Proposer to contract.

4. INTERPRETATIONS OF ADDENDA

No oral interpretation will be made to any Proposer as to the meaning of the Proposal/Contract Documents or any part thereof. Requests for a technical contract interpretation shall be made as directed in IFB No. 201702-AA.

Every interpretation made to a Proposer will be in the form of an Addendum to the Proposal/Contract documents. Written requests must be received as outlined in IFB No. 201702-AA. Once issued, the Addenda will be e-mailed to attendees of the Pre-Bid Meeting. All such Addenda will be available for review at least two business days prior to the Proposal opening. However, it shall be the Proposer's responsibility to make inquiries as to the issuance of any such Addenda. All approved Addenda shall become part of the contract and all Proposers shall be bound by such Addenda, regardless of whether the Proposers acknowledge their receipt.

5. MANDATORY INSPECTION OF SITE

Each Proposer shall visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor. Each Proposer shall fully inform himself as to the facilities involved, the difficulties, and restrictions attending the performance of the Contract. The Proposer should thoroughly examine and familiarize himself with the Reference Drawings, Technical Specifications, and all other Contract Documents. The Contractor by the execution of the Contract shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing. Owner will be justified in rejecting any claim based on lack of inspection of the site prior to the Proposal or the Proposer’s confusion with the Proposal/Contract Document.

A mandatory Pre-Bid Meeting will has been scheduled for Friday, March 14, 2017 (4:00 pm) at the University Park Elementary School – Cafeteria, located at 3505 Amherst Avenue in

Instruction to Proposers 00100-2 2/17
Dallas, Texas. All Proposers are required to complete the entire Job-Walk Conference including any question and answer periods. Proposers that do not complete the entire mandatory Job-Walk Conference shall be considered non-responsive. Contractors will not receive extra payment for conditions that can be, or should have been, determined by their participation in the mandatory Job-Walk Conference.

6. ALTERNATE PROPOSALS: RESERVED

7. PROPOSAL BOND

No Proposal bond will be required for submittal of Proposal.

8. COLLUSIVE AGREEMENTS

Each Proposer shall execute an affidavit to the effect that he has not entered into a collusive agreement with any other person, firm, or corporation in regard to any Proposal submitted.

9. STATEMENT OF PROPOSER’S QUALIFICATIONS

Each Proposer shall submit, on the form furnished for that purpose, a statement of the Proposer's qualifications. The Proposer's qualifications shall include a statement certifying that the Proposal firm (and any subcontractors to the Proposal firm) has not been in violation of applicable federal or state asbestos abatement regulations within the past five (5) years. Proposer shall provide full details of any such violations or notice of violations. Owner shall have the right to take such steps as it deems necessary to determine the ability of the Proposer to perform his obligations under the contract, and the Proposer shall furnish the Owner all such information and data for this purpose as it may request. The right is reserved to reject any Proposal where an investigation of the available data does not satisfy Owner that the Proposer is qualified to carry out properly the terms of the Contract.

10. UNIT PRICING

The unit price for each of the several work items in the Proposal shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price represent the total Proposal. Any Proposal not conforming to this requirement may be rejected as informal. Special attention is drawn to this condition, as the unit prices will be used to determine the amount of any change orders resulting from an increase or decrease in quantities.

11. TIME FOR RECEIVING PROPOSALS

Proposals received prior to the advertised hour of opening will be securely kept sealed. The person whose duty it is to open them will decide when the specified time has arrived. No Proposal received thereafter will be considered; except that when a Proposal arrives by mail after the time fixed for opening, but before the reading of all other Proposals is completed. In such case, it must be shown to the satisfaction of Owner that the Proposal's late arrival was
due solely to delay in the mail or delivery service for which the Proposer was not responsible. If so, Proposal may be received and considered.

12. OPENING OF PROPOSALS

At the time and place fixed for the opening of Proposals, owner will publicly open and record all Proposals received within the time set for receiving Proposals, irrespective of any irregularities therein.

13. WITHDRAWAL OF PROPOSALS

Proposals may be withdrawn by written request dispatched for delivery in the normal course of business prior to the Proposal opening.

14. AWARD OF CONTRACT - REJECTION OF PROPOSALS

a) The contract will be awarded to the most qualified and responsible Proposer submitting a responsive Proposal. The Proposer selected will be notified at the earliest possible date.

b) Owner reserves the right to determine the successful Proposer on the basis of the sum of all or part of the project detailed in the Proposal Form. Owner reserves the right to divide the project (by campus) as necessary and award multiple contracts to multiple Proposers.

c) Owner reserves the right to reject any or all Proposals and to waive any informality in Proposals received where such rejection or waiver is in its interest.

d) Owner reserves the right to consider as unqualified to do the work described herein any Proposer who does not habitually perform with his own forces the major portions of the abatement work embraced by this Proposal/Contract Document.

e) Owner may consider as irregular any Proposal on which there is an interlineation or departure from the Proposal Form hereto attached and at its option may reject the same.

f) Incomplete or missing required Proposal submittal documentation shall be considered reasonable grounds for rejecting the Proposal. An authorized representative of the Proposer's firm shall sign the Proposal.

g) The Proposal shall be rejected if the Proposer does not provide Proposal prices for all the Proposal work listed.

15. EXECUTION OF AGREEMENT/PERFORMANCE AND PAYMENT BONDS

a) Performance and Payment Bonds: Requires all contractors that enter into a formal contract with Owner for this Project obtain a Payment Bond and a Performance Bond for the amount of the contract before commencing with Work.

b) The successful Proposer must execute the agreement and supply the required bonds at least two business days prior to the NESHAP 10-day notification commencement date
[eleventh (11th) day]. Failure to do so once the prescribed forms are presented for signature or within such extended period as Owner may grant shall constitute a default. Owner may then, at its option, either award the contract to another Proposer or re-advertise the Project.

c) Proposer shall, within twenty-four (24) hours of notification of selection for the award of contract for the Work, submit to Owner a list of names of the subcontractors or other persons or entities proposed for the principal portions of the Work.

d) The Proposer will be required to establish to the satisfaction of the Asbestos Consultant and Owner, the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Proposal Documents.

e) Persons and entities proposed by the Proposer and to whom the Asbestos Consultant and Owner have made no reasonable objection must be used for the work for which they were approved and shall not be changed except with the written approval of the Asbestos Consultant.

16. AGREEMENT TO CONDITIONS

The Proposer agrees, by the signing and the submission of a Proposal, to the conditions stated in these Instructions to Proposers.

17. INDEMNIFICATION OF OWNER AND PROJECT CONSULTANT

a) Notice is hereby given to the Contractor of the need to obtain property and liability insurance coverage including occurrence insurance in amounts sufficient to meet at least, the minimum thresholds stated in this document. Owner does not intend to purchase additional insurance coverage during the course of this Project. This responsibility shall be borne by the Contractor. By this provision, the Contractor is so informed prior to the development of his Proposal. Other indemnification requirements shall be as required in the Asbestos Abatement Technical Specifications.

b) Contractor agrees that he has been so notified and that he will take the appropriate measures, as required by this document, to ensure that at least, the minimum property and liability coverage thresholds are met.

c) Contractor hereby agrees to indemnify and hold harmless Owner and the Project Consultant from any obligations, costs, claims, judgments, attorney’s fees, and attachments arising from or growing out of any damage to property or injury or death to persons (including any damage or injury caused to property or person of any party including any employee of the Contractor, Subcontractors, or Sub-subcontractors) arising from or growing out of the performance of the services under this Contract except, when the same are caused by the willful misconduct or negligence of Project Consultant and/or Owner.
SECTION 00200

PROPOSAL FORM
PROPOSAL FORM

____________________, 2017
(Date of Proposal)

PROPOSAL OF ________________________________

A Corporation organized and existing under the laws of the State of ________________, or
A Partnership consisting of ________________________________.

TO:  Highland Park Independent School District
     HPISD Purchasing Department
     7015 Westchester Drive
     Dallas, Texas  75205

PROPOSAL FOR:

Base Bid:  University Park Elementary School

The abatement of asbestos-containing chalkboard and mastic, ceiling tile mastic, roof
flashing, window caulk, pipe insulation and pipe insulation fittings, flooring and mastic, and
wallboard walls and ceilings as indicated on the Reference Drawings.

PROPOSAL
Removal of ACM as Identified in the Contract Documents  $ ____________________

PROPOSAL in writing:

_________________________________ Dollars and ______________________ cents

Work to be completed within 3 calendar weeks.

UNIT PRICING

Unit pricing shall be utilized for additional material that may be uncovered during the
abatement project.

ACM Pipe Insulation (outside of mechanical rooms)  $ __________/ Ln Ft
ACM Pipe Fitting Insulation (outside of mechanical rooms)  $ __________/ Ln Ft
ACM Wallboard (joint compound)  $ __________/ Sq Ft
ACM Door/Window Caulk  $ __________/ Ln Ft
The undersigned Proposer, pursuant to the foregoing Invitation for Proposals, has carefully examined the Instructions to Proposers, this Proposal, the Supplemental Conditions, the form of Contract Agreement and Bonds, the General Conditions of the Agreement, the Specifications, the Plans, and also the site of the work, and will provide all necessary labor, superintendence, machinery, equipment, tools, materials, services and other facilities to complete fully all the work as provided in the Contract Documents; and binds himself upon formal acceptance of his Proposal to execute a contract and bonds, according to the prescribed forms, for Proposal items listed above.

The undersigned, if awarded a contract, agrees to substantially complete all work covered by these Contract Documents within the number of work days shown in the space provided above, from and including the day established for the start of work by written work order to be issued by Owner or Project Consultant.

Within eleven (11) business days after formal acceptance of this Proposal by a Notice of Award of contract, the undersigned will execute the Contract Agreement on the eleventh working day, as per the NESHAP 10-day notification, and will furnish approved surety bonds and such other bonds as required by the Contract Documents for the faithful performance of the Contract.

Furthermore, Proposer agrees to reimburse any Texas Department of State Health Services penalties and any legal and/or court costs to Owner and/or the Project Consultant if the Contract Agreement is not executed within the time above set forth or completed as specified herein.

Receipt is acknowledged of the following addenda:

Addendum No. 1 ________________
Addendum No. 2 ________________

Respectfully Submitted:

By: ________________________________
Signature

______________________________
Printed Name and Title

______________________________
Street Address or P.O. Box #

______________________________
City, State, Zip Code

Attested By:

______________________________
Signature of Attestor

______________________________
Printed Name and Title

(SEAL) Required if Proposer is a Corporation.
SECTION 00300

BIDDEES QUALIFICATIONS AND CERTIFICATIONS
AND OTHER REQUIRED FORMS

(THIS SECTION MUST BE COMPLETED BY PROPOSER)
STATEMENT OF BIDDER’S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. If necessary, questions may be answered on separate attached sheets. Any additional information may be submitted by the Proposer should he so desire. The Contractor shall also meet any qualifications as required in the Asbestos Abatement Technical Specifications.

1. Name of Proposer:

2. Permanent main office address and phone number:

3. Date firm organized:

4. If a corporation, where incorporated:

5. Years engaged in the contracting business under current firm name:

6. General nature of work performed:

7. Contracts currently in hand (Please list below):

<table>
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<tr>
<th>Owner</th>
<th>Description and Amount</th>
<th>Completion Date</th>
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8. Provide proof of at least five projects of asbestos abatement involving similar scope that your company has worked on in the past 2 years (or is currently working on):

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<tr>
<th>Owner</th>
<th>Location</th>
<th>Description</th>
<th>Completion Date</th>
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9. List, if any, major project involving hazardous material removal other than ACM, which were completed in the past 2 years. For example, PCB, mercury, and mold (fungi):

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<thead>
<tr>
<th>Owner</th>
<th>Description and Amount</th>
<th>Completion Date</th>
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10. Years experience in work similar to this project:

11. Experience of principal members of your organization, including officers:

<table>
<thead>
<tr>
<th>Name</th>
<th>Years of Relevant Experience</th>
<th>Relevant Licenses or Certifications Held</th>
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</table>
12. List the proposed facility(ies) to be used when disposing of the hazardous materials removed from the Project. Is this a facility permitted to accept this type of material(s):

<table>
<thead>
<tr>
<th>Hazardous Material Type</th>
<th>Proposed Facility Location</th>
<th>Proposed Facility Permit No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
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<tr>
<td>Other:</td>
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<tr>
<td>Other:</td>
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</table>

13. List any OSHA, EPA, TDSHS, and other asbestos related violations, and/or hazardous material abatement violations that your company has been cited with within the past five years. If no such violations have occurred, provide a notarized letter attesting that fact.

<table>
<thead>
<tr>
<th>Citing Agency</th>
<th>Nature of Violation</th>
<th>Penalty Imposed</th>
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14. Within the past five (5) years, has the business, under any former name(s), or the Principles of any of the business’ employers, in any former capacities, been issued any asbestos regulation violations or hazardous materials abatement violations? If YES, indicate the type and nature of the violation(s). If NO, the Bidder shall submit a notarized letter on business letterhead attesting that the business (under its current or any former name(s)) and the Principles(s) or any employees have not been issued any asbestos regulation violation(s) or hazardous materials abatement violations within the past five (5) years.

15. Have you ever:

   a. Failed to complete work awarded to you?  _____ No  _____ Yes

   b. Defaulted on a contract?  _____ No  _____ Yes

   If you answered yes to either of the above, please explain below:

   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
16. Does the Bidder meet all the licensure requirements necessary in the State of Texas to complete the work involved with this project?

     ______ YES     ______ NO

If "NO", explain below. How does the Bidder propose to complete this project under these conditions?

17. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by Owner in verification of the recitals comprising the Statement of Bidder’s Qualifications.

     Dated this ___ day of ______________________, 2010.

     ____________________________
     (Signature of Contractor’s Authorized Representative)

     ____________________________
     (Title of Contractor’s Authorized Representative)
ARTICLE 1: DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated, which are applicable to both the singular and plural thereof:

Abatement Contractor - The person, firm, or corporation with whom Owner has entered into the Agreement.

Addenda - Written or graphic instruments issued prior to the opening of Proposals, which clarify, correct, or change the Proposal Documents or the Contract Documents.

Agreement - The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form accepted by Project Consultant, which is to be used by Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bonds - Performance, Payment, and other bonds or instruments of security.

Change Order - A document recommended by Project Consultant and signed by Contractor and Owner that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Proposal (including documentation accompanying the Proposal and documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, and the Specifications as the same are more specifically identified in the Agreement, together with all amendments, modifications, and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The monies payable by Owner to Contractor under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9 in the case of Unit Price Work).

Contract Time - The number of work shifts (computed as provided in paragraph 16.2) or the date stated in the Agreement for the completion of the Work.
Defective - An adjective which, when modifying the word Work, refers to Work that is unsatisfactory, faulty, or deficient or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents or has been damaged prior to Project Consultant's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective; but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Field Order - A written order issued by Project Consultant that orders minor changes in the Work in accordance with paragraph 9.5 but does not involve a change in the Contract Price or the Contract Time.

General Requirements - Sections of Division 1 of the Asbestos Abatement Specifications.

Pre-Final Inspection - The inspection conducted to determine that the Project, or a portion thereof, is substantially complete.

Final Inspection - The inspection conducted to determine that all deficiencies found in the Pre-Final Inspection or subsequently have been corrected and that it is appropriate to release retainage and/or make final payment.

Laws and Regulations: Laws or Regulations - Laws, rules, regulations, ordinances, codes, and/or orders.

Notice to Proceed - A written notice given by Owner to Contractor (with a copy to Project Consultant) fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform Contractor's obligations under the Contract Documents.

Owner - The party or authority, corporation, association, firm, or person with whom Contractor has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization - Placing a portion of the Work in service for the purpose for which it is authorized representative thereof intended (or related purpose) before reaching Substantial Completion for all the Work.

Project - The total construction of which the Work to be provided under the Contract Documents may be the whole or a part as indicated elsewhere in the Contract Documents.

Proposal - The offer or Proposal of the Proposer submitted on the prescribed form setting forth the prices for the Work to be performed.

Resident Project Representative - The authorized representative of Project Consultant, who is assigned to the site or any part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules, and other data that are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams, and other information prepared by a Supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.
Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual, firm, or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion - Stage of completion of the Work (or a specified part thereof) having progressed to a point where, in the opinion of Project Consultant as evidenced by Project Consultant's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, that the Work (or specified part thereof) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions - The part of the Contract Documents that amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, material supplier, or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments and any encasement containing such facilities that have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Shift – One consecutive 10-hour period in which Contractor is scheduled to perform work associated with these Contract Documents.

Work Directive Change - A written directive to Contractor, issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Project Consultant, ordering an addition, deletion, or revision in the Work or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated into a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or the Contract Time as provided in paragraph 10.2.

Written Amendment - A written amendment of the Contract Documents, signed by Owner and Contractor on or after the Effective Date of the Agreement and normally dealing with the non-engineering or non-technical rather than strictly Work-related aspects of the Contract Documents.
ARTICLE 2: PRELIMINARY MATTERS

2.1 Delivery of Bonds - Within five (5) days after the Contractor delivers the executed Agreements to Owner, Contractor shall also deliver to Owner such Bonds as Contractor may be required to furnish in accordance with paragraph 5.1.

2.2 Copies of Documents - Owner shall furnish to Contractor one (1) copy (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed - Unless otherwise specified in the Supplementary Conditions, the Contract Time will commence to run on the fifth (5th) day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time after the Effective Date of the Agreement.

2.4 Starting the Project - Contractor shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.5 Before Starting Construction - Before submitting a Proposal for each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown therein and all applicable field measurements. Contractor shall promptly report in writing to Project Consultant any conflict, error, or discrepancy that Contractor may discover and shall obtain a written interpretation or clarification from Project Consultant.

2.6 Within ten (10) days after the Effective Date of the Agreement (unless otherwise specified in the Supplementary Conditions), Contractor shall submit to Project Consultant for review:

2.6.1 An estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2 A preliminary schedule of Shop Drawing submissions; and

2.6.3 A preliminary schedule of values for all of the Work, which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work, which will be confirmed in writing by Contractor at the time of submission.

2.7 Before any Work at the site is started, Contractor shall deliver to Owner, with a copy to Project Consultant, certificates (and other evidence) of insurance requested by Owner) that Contractor is required to purchase and maintain in accordance with paragraphs 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8.
2.8 **Preconstruction Conference** - Within thirty (30) days after the Effective Date of the Agreement but before Contractor starts the Work at the site, a conference attended by Contractor, Owner Representative, Project Consultant, and others, as appropriate, will be held (unless Supplementary Conditions state otherwise) to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

2.9 **Finalizing Schedule** - At least ten (10) days before submission of the first Application for Payment, a conference attended by Contractor, Project Consultant, and others, as appropriate, may be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to Project Consultant as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on Project Consultant responsibility for the progress or scheduling of the Work nor relieve Contractor from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to Project Consultant as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to Project Consultant as to form and substance.

2.10 **Familiarity With Work** - Contractor represents that he has familiarized himself with, and assumes full responsibility for having familiarized himself with, the nature and extent of the Contract Documents, Work, locality, and all local conditions and federal, state, and local laws, ordinances, rules, and regulations that may in any manner affect performance of the Work and represents that he has correlated his study and observations with the requirements of the Contract Documents. Contractor also represents that, to the extent he deems necessary, he has studied all surveys and investigation reports of underground and physical conditions referred to in Article 4 and made such additional surveys and investigations as he deems necessary for the performance of the Work at the Contract Price in accordance with the requirements of the Contract Documents and that he has correlated the results of all such data with the requirements of the Contract Documents.

ARTICLE 3: CONTRACT DOCUMENTS: INTENT, MEANING, REUSE

3.1 **Intent** - The Contract Documents comprise the entire Agreement between Owner and Contractor concerning the Work. The Contract Documents are complementary: what is called for by one is as binding as if called for by all. The Contract Documents are constructed in accordance with the laws of the State of Texas.

3.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied, whether or not specifically called for. When words having a well-known technical or trade meaning are used to describe Work, materials, or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals, or codes of any technical society, organization, or association or to Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Proposals, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not...
specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of Owner, Contractor, or Project Consultant, or any of their consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to Project Consultant, or any of Project Consultant's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.14 or 9.15. Clarifications and interpretations of the Contract Documents shall be issued by Project Consultant as provided in paragraph 9.4.

3.3 If, during performance of the Work, Contractor finds a conflict, error, or discrepancy in the Contract Documents, Contractor shall so report to Project Consultant in writing at once and before proceeding with the Work affected thereby and shall obtain a written interpretation or clarification from Project Consultant; however, Contractor shall not be liable to Owner or Project Consultant for failure to report any conflict, error, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof or should reasonably have known thereof. In resolving such conflicts, error, or discrepancy, Specifications shall govern over referenced standard specifications of any governmental authority and over manuals or codes of any technical society, organization, or association. Plans shall govern over Specifications. Supplementary Conditions shall govern over General Conditions.

3.4 Amending and Supplementing Contract Documents - The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.4.1 A formal Written Amendment,

3.4.2 A Change Order (pursuant to paragraph 10.3), or

3.4.3 A Work Directive Change (pursuant to paragraph 10.1).

3.5 In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.5.1 A Field Order (pursuant to paragraph 9.5),

3.5.2 Project Consultant's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or;

3.5.3 Project Consultant's written interpretation or clarification (pursuant to paragraph 9.4)

3.6 Reuse of Documents - Neither Contractor nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with Owner shall have or acquire any title to or ownership rights in any of the Plans, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Project Consultant; and these documents shall not be reused on extensions of the Project or any other project without written consent of Owner and Project Consultant and specific written verification or adoption by Project Consultant.
ARTICLE 4: AVAILABILITY OF LANDS: REFERENCE POINTS

4.1 Availability of Lands - Owner shall furnish the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands designated for the use of Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Owner, unless otherwise provided in the Contract Documents. If Contractor believes that any delay in Owner's furnishing these lands, rights-of-way, or easements entitles Contractor to an extension of the Contract Time, Contractor may make a claim therefor as provided in Article 12. Contractor shall provide all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions:

4.2.1 Existing Structures - Notice is given to the physical conditions of or relating to existing surface and subsurface structures at or contiguous to the site. Except as indicated in the immediately preceding sentence and in paragraph 4.2.5, Contractor shall have full responsibility with respect to physical conditions of or relating to such structures.

4.2.2 Report of Differing Conditions - Contractor shall, promptly after becoming aware of and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify Owner and Project Consultant in writing about the inaccuracy or difference if Contractor believes that:

4.2.2.1 Any technical data on which Contractor is entitled to rely as provided in paragraph 4.2.1 is inaccurate, or

4.2.2.2 Any physical condition uncovered or revealed at the site differs materially from that indicated, reflected, or referred to in the technical data.

4.2.3 Project Consultant's Review - Project Consultant will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise Owner in writing of Project Consultant's findings and conclusions.

4.2.4 Possible Document Change - If Project Consultant concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.5 Possible Price and Time Adjustments - In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that these adjustments are attributable to any such inaccuracy or difference. If Owner and Contractor are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.
ARTICLE 5: BONDS AND INSURANCE

5.1 Performance and Other Bonds – Contractor shall be required to furnish Performance and Payment Bonds for this project. The Performance Bond and the Payment Bond, in the amount of one hundred percent (100%) of the contract sum, are due within five (5) days after presentation of the Form of Agreement.

5.2 Surety – The surety company issuing the Bonds shall be licensed to do business in the state where the project work will be performed, and shall be listed by the United States Treasury (T-Listed). The surety company issuing the Bonds shall further maintain an A.M. Best rating of not less than A. The Attorney-in-fact who executes the Bonds on behalf of the surety shall be a resident of the state where the project work will be performed, and shall attach to the Bonds a certified and current copy of his Power of Attorney.

5.3 Contractor’s Liability Insurance - Contractor shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and or Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.3.1 Claims under worker's or workmen's compensation, disability benefits, and other similar employee benefit acts;

5.3.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

5.3.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

5.3.4 Claims for damages insured by personal injury liability coverage that are sustained (a) by any person as a result of an offense directly related to the employment of such person by Contractor or (b) by any other person for any other reason;

5.3.5 Claims for damages, other than to Work itself, because of injury to or destruction of tangible property, wherever located, including loss of use resulting therefrom;

5.3.6 Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed-operations insurance. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with paragraph 13.12. In addition, Contractor shall maintain such completed-operations insurance for at least one year after final payment and furnish Owner with evidence of continuation of such insurance at final payment.
5.4 **Contractual Liability Insurance** - The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to Contractor's obligations under paragraphs 6.30 and 6.31.

5.5 **Owner's Liability Insurance** - Owner's Protective Liability: Contractor shall furnish, with a carrier acceptable to the Owner, a policy of liability insurance, commonly called "Owner's Protective Liability," in the name of the Owner, providing "Independent Contractor's Coverage" for the operations embraced by this Contract with the limits of liability as set out in the Supplementary Conditions.

5.6 **Property Insurance** - Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of Owner, Contractor, Subcontractors, Project Consultant in the Work, all of whom shall be listed as insured or additional insured parties, shall insure against the perils of fire and extended coverage, and shall include "all risks" insurance for physical loss and damage, including theft, vandalism, and malicious mischief, collapse and water damage, and such other perils as may be in the Supplementary Conditions, and shall include damages, losses, and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including, but not limited to, fees and charges of Project Consultant, architects, attorneys, and other professionals).

5.7 Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.8 All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by Contractor in accordance with paragraphs 5.3 through 5.7 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least thirty (30) days' prior written notice has been given to Owner and Project Consultant by certified mail and will contain waiver provisions in accordance with paragraph 5.10.2.

5.9 If Owner requests in writing that other special insurance be included in the property insurance policy, Contractor shall, if possible, include such insurance, and the cost thereof will be charged to Owner by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, Contractor shall in writing advise Owner whether or not such other insurance has been procured by Contractor.

5.10 **Waiver of Rights:**

5.10.1 Owner and Contractor waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work and also waive all such rights against the Subcontractors, Project Consultant and all other parties named as insured in such policies for losses and damages so caused.

As required by paragraph 6.11, each subcontract between Contractor and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor
of Owner, Contractor, Project Consultant and all other parties named as insured. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance payable under any policy required by these Contract Documents.

5.10.2 Owner and Contractor intend that any policies provided in response to paragraphs 5.6, 5.7, and 5.8 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage, the insurer will have no rights of recovery against any of the parties named as insured or additional insured.

5.11 **Receipt and Application of Proceeds** - Any insured loss under the policies of insurance required by paragraphs 5.5, 5.6, and 5.7 will be adjusted with Owner and made payable to Owner as trustee for the insured, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the monies so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.12 Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen (15) days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, Owner as trustee shall, upon the occurrence of an insured loss, give Bond for the proper performance of such duties.

5.13 **Acceptance of Insurance** - If Owner has any objection to the coverage afforded by, or other provisions of, the insurance required to be purchased and maintained by Contractor in accordance with paragraphs 5.3, 5.4, 5.5, 5.6, and 5.7, on the basis of its not complying with the Contract Documents, Owner shall notify Contractor in writing thereof within ten (10) days of the date of delivery of such certificates to Owner in accordance with paragraph 2.7. Failure by Owner to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

5.14 **Partial Utilization - Property Insurance** - If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10, provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use or occupancy.
ARTICLE 6: CONTRACTOR'S RESPONSIBILITIES

6.1 **Supervision and Superintendent** - Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but Contractor shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence, or procedure of construction that is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2 Contractor shall keep on the Work at all times during its progress, unless otherwise specified in the Supplementary Conditions, a competent resident superintendent, who shall not be replaced without written notice to Owner and Project Consultant except under extraordinary circumstances. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

6.3 **Labor, Materials, and Equipment** - Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. All contractor's employees shall be trained, certified, and licensed by the State of Texas for the work they are to perform. Contractor shall at all times maintain good discipline and order at the site.

6.4 Unless otherwise specified in the General Requirements, Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the Work.

6.5 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Project Consultant, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to Project Consultant, or any of Project Consultant's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.14 or 9.15.

6.6 **Adjusting Progress Schedule** - Contractor shall submit to Project Consultant for acceptance (to the extent indicated in paragraph 2.9), adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.
6.7 Substitutes or "Or-Equal" Items:

6.7.1 Whenever materials or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by Project Consultant if sufficient information is submitted by Contractor to allow Project Consultant to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by Project Consultant will include the following, as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by Project Consultant from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to Project Consultant for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified, and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for Work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application, and available maintenance, repair, and replacement service will be indicated. Project Consultant and Contractor shall agree on the cost, if any, for the Project Consultant to evaluate proposed substitutes. The agreed cost shall also be included in the Contractor's written application to Project Consultant for the proposed substitute. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by Project Consultant in evaluating the proposed substitute. Project Consultant may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

6.7.2 If a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction acceptable to Project Consultant, if Contractor submits sufficient information to allow Project Consultant to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by Project Consultant will be similar to that provided in paragraph 6.7.1 as applied by Project Consultant and as may be supplemented in the General Requirements.
6.8 Concerning Subcontractors, Suppliers, and Others:

6.8.1 Contractor shall not employ any Subcontractor, Supplier, or other person or organization (including those acceptable to Owner and Project Consultant as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom Owner or Project Consultant may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other person or organization to furnish or perform any of the Work against whom Contractor has reasonable objection.

6.8.2 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other persons or organizations to be submitted to Owner in advance of the specified date prior to the Effective Date of the Agreement for acceptance by Owner and Project Consultant and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner’s or Project Consultant’s acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Proposal documents or the Contract Documents) of any such Subcontractor, Supplier, or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case Contractor shall submit an acceptable substitute, the Contract Price will be adjusted if there is any difference in the cost occasioned by such substitution, and an appropriate Change Order will be issued or Written Amendment signed after all parties agree to such change. No acceptance by Owner or Project Consultant of any such Subcontractor, Supplier, or other person or organization shall constitute a waiver of any right of Owner or Project Consultant to reject Defective Work.

6.9 Contractor shall be fully responsible to Owner and Project Consultant for all acts and omissions of the Subcontractors, Suppliers, and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor’s own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between Owner or Project Consultant and any such Subcontractor, Supplier, or other person or organization, nor shall it create any obligation on the part of Owner or Project Consultant to pay or see to the payment of any monies due any Subcontractor, Supplier, or other person or organization except as may otherwise be required by Laws or Regulations.

6.10 The divisions and sections of the Specifications and the identifications of any Plans shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11 [Not applicable].

6.12 Patent Fees and Royalties - Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Project Consultant its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. Contractor shall indemnify and hold harmless Owner and Project
Consultant and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorney's fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents and shall defend all such claims in connection with any alleged infringement of such rights.

6.13 Permits - Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Contractor shall pay governmental charges and inspection fees necessary for the prosecution of the Work that are applicable at the time of opening of Proposals or, if there are no Proposals, on the Effective Date of the Agreement. Contractor shall pay all charges of utility owners for connections to the Work, and Owner shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees, unless otherwise stated in the Supplementary Conditions.

6.14 Laws and Regulations:

6.14.1 Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Project Consultant shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

6.14.2 If Contractor observes that the Specifications or Plans are at variance with any Laws or Regulations, Contractor shall give Project Consultant prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If Contractor performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations and without such notice to the Project Consultant, Contractor shall bear all costs arising therefrom; however, it shall be Contractor's primary responsibility to make certain that the Specifications and Plans are in accordance with such Laws and Regulations.

6.15 Taxes and Fees - Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the State of Texas that are applicable during the performance of the Work. Contractor shall pay all highway, hauling, transportation, disposal, and landfill fees.

6.16 Use of Premises - Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits, and easements and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or areas, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against Owner or Project Consultant by any such owner or occupant because of the performance of the Work, Contractor shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner and Project Consultant...
harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of Project Consultants, architects, attorneys, and other professionals and court costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any such other party against Owner or Project Consultant to the extent based on a claim arising out of Contractor's performance of the Work.

6.17 During the progress of the Work, Contractor shall keep the premises free from accumulation of waste materials, rubbish, and other debris resulting from the Work. At the completion of the Work, Contractor shall remove all waste materials, rubbish, and debris from and about the premises, as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents. Contractor shall not place or maintain, or allow to be placed or maintained, any advertising matter, sign, bill, poster, etc., on or about the site, except as required by law or by the Contract Documents, unless approved by the Owner, in writing.

6.18 Contractor shall not load any structure, or permit any part of any structure to be loaded, in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressure that will endanger it.

6.19 Record Documents - Contractor shall maintain in a safe place at the site one record copy of all Plans, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders, and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents, together with all approved samples and a counterpart of all approved Shop Drawings, will be available to Project Consultant for reference. Upon completion of the Work, these record documents, samples, and Shop Drawings will be delivered to Project Consultant for delivery to Owner.

6.20 Safety and Protection - Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury, or loss to:

6.20.1 All employees on the Work and other persons and organizations who may be affected thereby;

6.20.2 All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designed for removal, relocation, or replacement in the course of construction.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or
in part, by Contractor, any Subcontractor, any Supplier, or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and Project Consultant has issued a notice to Owner and Contractor in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21 Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent, unless otherwise designated in writing by Contractor to Owner.

6.22 **Emergencies** - In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Project Consultant or Owner, is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Project Consultant prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Project Consultant determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

6.23 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, Contractor shall submit to Project Consultant, for review and approval in accordance with the accepted schedule of Shop Drawings submissions (see paragraph 2.9) or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as Project Consultant may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data as required, to enable Project Consultant to review the information as required.

6.24 Contractor shall also submit to Project Consultant for review and approval, with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by the Contractor and will be accompanied by a specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to review of the submission; all samples will be identified clearly as to material, Supplier, and pertinent data, such as catalog numbers and the use for which intended.

6.25 Before submission of each Shop Drawing or sample, Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents: in addition, Contractor shall cause a specific notation of each such variation to be made on each Shop Drawing or sample submitted to Project Consultant for review and approval.
6.26 Project Consultant will review and approve, with reasonable promptness, Shop Drawings and samples, but Project Consultant's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences, or procedures of construction (except where a specific means, method, technique, sequence, or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Project Consultant and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Project Consultant on previous submittals.

6.27 Project Consultant's review and approval of Shop Drawings and samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents, unless Contractor has in writing called Project Consultant's attention to each such variation at the time of submission as required by paragraph 6.25 and Project Consultant has given written approval of each such variation by a specific written notation thereof incorporated into or accompanying the Shop Drawing or sample approval; nor will any approval by Project Consultant relieve Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.

6.28 Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to Project Consultant's review and approval of the pertinent submission will be the sole expense and responsibility of Contractor.

6.29 Continuing the Work - Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any dispute or disagreements, except as permitted by paragraph 15.5 or as Contractor and Owner may otherwise agree in writing.

6.30 Indemnification - To the fullest extent permitted by the Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Project Consultant and their consultants, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense (a) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Laws and Regulations and regardless of the negligence of any such party.

6.31 In any and all claims against Owner or Project Consultant or any of their consultants, agents, or employees by any employee of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the
amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor or other person or organization under worker's or workmen's compensation acts, disability benefits acts, or other employee benefit acts.

6.32 The obligations of Contractor under paragraph 6.30 shall not extend to the liability of Project Consultant or Project Consultant's consultants, agents, or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, design, or Specifications.

ARTICLE 7: OTHER WORK

7.1 Related Work at Site - Owner may perform other work related to the Project at the site by Owner's own forces, have other work performed by utility owners, or let other direct contracts that shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to Contractor prior to starting any such other work.

7.2 Contractor shall afford each utility owner and other contractor who is a party to such a direct contract (or Owner, if Owner is performing the additional work with Owner's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work and shall properly connect and coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with written consent of Project Consultant and the others whose work will be affected. The duties and responsibilities of Contractor under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

7.3 If any part of Contractor's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or Owner), Contractor shall inspect and promptly report to Project Consultant in writing any delays, defects, or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. Contractor's failure so to report will constitute an acceptance of the other work as fit and proper for integration with Contractor's Work except for latent or non-apparent defects and deficiencies in the other work.

7.4 Coordination - If Owner contracts with others for the performance of other Work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions.

Unless otherwise provided in the Supplementary Conditions, neither Owner nor Project Consultant shall have any authority or responsibility in respect of such coordination.
ARTICLE 8: OWNER’S RESPONSIBILITIES

8.1 Owner shall issue all communications to Contractor through Project Consultant.

8.2 In case of termination of the employment of Project Consultant, Owner shall appoint an Project Consultant against whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Project Consultant.

8.3 Owner shall furnish the data required of Owner under the Contract Documents promptly and shall make payments to Contractor promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4 Owner's duties in request of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.2.

8.5 Owner is obligated to execute Change Orders as indicated in paragraph 10.3.

8.6 Owner's responsibility in respect of certain inspections, tests, and approvals is set forth in paragraph 13.4.

8.7 In connection with Owner's rights to stop Work or suspend Work, see paragraphs 13.10 and 15.1.

ARTICLE 9: PROJECT CONSULTANT’S STATUS DURING CONSTRUCTION

9.1 Project Consultant - Project Consultant will be Owner's representative during the abatement periods of the construction Project. The duties and responsibilities and the limitations of authority of Project Consultant as Owner’s representative during construction are set forth in the Contract Documents and shall not be extended without written consent of Owner and Project Consultant.

9.2 Visits to Site - Project Consultant will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Project Consultant will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. Project Consultant's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, Project Consultant will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work.
9.3 **Project Representative** - Project Consultant will furnish a Resident Project Representative to assist Project Consultant in observing the performance of the Work. The duties, responsibilities, and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If Owner designates another agent to represent Owner at the site who is not Project Consultant's agent or employee, the duties, responsibilities, and limitations of authority of such other person will be as provided in the Supplementary Conditions.

9.4 **Clarifications and Interpretations** - Project Consultant will issue, with reasonable promptness, such written clarifications or interpretations of the requirements of the Contract Documents as Project Consultant may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. No oral clarification or interpretation shall be valid.

9.5 **Authorized Variation in Work** - Project Consultant may authorize minor variations in the Work from the requirement of the Contract Documents that do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly.

9.6 **Rejecting Defective Work** - Project Consultant will have authority to disapprove or reject Work that Project Consultant believes to be Defective and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed, or completed.

9.7 **Shop Drawings, Change Orders, and Payments** - In connection with Project Consultant's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8 In connection with Project Consultant's responsibilities in respect of Application for Payment, etc., see Article 14.

9.9 **Determinations for Unit Prices** - Project Consultant will determine the actual quantities and classifications of Unit Price Work. Project Consultant will review with Contractor, Project Consultant's preliminary determination on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Project Consultant's written decisions thereon will be final and binding upon Owner and Contractor, unless, within ten (10) days after the date of any such decision, either Owner or Contractor delivers to Project Consultant written notice of intent to appeal such a decision.

9.10 **Decision on Disputes** - Project Consultant will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes, and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to Project Consultant in writing with a request for a formal decision in accordance with this paragraph, which Project Consultant will render in writing within a reasonable time. Written notice of each such claim, dispute, and other matter will be delivered by the claimant to Project Consultant and the other party to the occurrence of the event giving
rise thereto, and written supporting data will be submitted to Project Consultant and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to Project Consultant and the other party within sixty (60) days after such occurrence unless Project Consultant allows an additional period of time to ascertain more accurate data in support of the claim.

9.11 When functioning as interpreter and judge under paragraphs 9.9 and 9.10, Project Consultant will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Project Consultant pursuant to paragraphs 9.9 and 9.10 with respect to any such claim, dispute, or other matter (except any that have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute, or other matter.

9.12 Limitations on Project Consultant's Responsibilities - Neither Project Consultant's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by Project Consultant in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Project Consultant to Contractor, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any Surety for any of them.

9.13 Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," or terms of like effect or import are used or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of Project Consultant as to the Work, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to Project Consultant any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.14 or 9.15.

9.14 Project Consultant will not be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, and Project Consultant will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Project Consultant will not be responsible to act as Superintendent, Foreman, or Safety Project Consultant for the Contractor.

9.15 Project Consultant will not be responsible for the acts or omissions of Contractor or of any Subcontractor, of any Supplier, or of any other person or organization performing or furnishing any of the Work.
ARTICLE 10: CHANGES IN THE WORK

10.1 Without invalidating the Agreement and without notice to any Surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved, which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2 If Owner and Contractor are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3 Owner and Contractor shall execute appropriate Change Orders (or Written Amendments) covering:

10.3.1 Changes in the Work that are ordered by Owner pursuant to paragraph 10.1, are required because of acceptance of Defective Work under paragraph 13.13 or correcting Defective Work under paragraph 13.14, or are agreed to by the parties;

10.3.2 Changes in the Contract Price or Contract Time that are agreed to by the parties; and

10.3.3 Changes in the Contract Price or Contract Time that embody the substance of any written decision rendered by Project Consultant pursuant to paragraph 9.11, provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.4 If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a Surety, the giving of any such notice will be Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11: CHANGE OF CONTRACT PRICE

11.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities, and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract Price.

11.2 The Contract Price may be changed only by a Change Order or by Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to Project Consultant promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such
occurrence (unless Project Consultant allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by Project Consultant, in accordance with paragraph 9.11, if Owner and Contractor cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph.

11.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.9 inclusive).

11.3.2 By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3 On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a Contractor's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

11.4 Cost of the Work - The term Cost of the Work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.5:

11.4.1 Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise and payroll taxes, worker's and workmen's compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, and on Saturday, Sunday, or legal holidays shall be included in the above to the extent authorized by Owner.

11.4.2 Cost of all materials and equipment furnished and incorporated into the Work, including costs of transportation and storage thereof, and Supplier's field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and all returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
11.4.3 Payments made by Contractor to the Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive Proposals from Subcontractors acceptable to Contractor and shall deliver such Proposals to Owner, who will then determine, with the advice of Project Consultant, which Proposals will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as Contractor's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4 Costs of special consultants (including, but not limited to, Project Consultant, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

11.4.5 Supplemental costs include the following:

11.4.5.1 The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

11.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site, and hand tools not owned by the workers that are consumed in the performance of the Work and cost less market value of such items used but not consumed that remain the property of Contractor.

11.4.5.3 Rentals of all construction equipment and machinery and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Project Consultant, and the costs of transportation, loading, unloading, installation, dismantling, and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4 Sales, consumer, use, or similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

11.4.5.5 Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by Contractor in connection with the performance and furnishing of the Work, provided they have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and
expenses shall be included in the Cost of the Work for the purpose of determining Contractor's Fee. If, however, any such loss or damage requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7 The cost of utilities, fuel, and sanitary facilities at the site.

11.4.5.8 Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums of property insurance coverage within the limits of the deductible amounts established by Owner in accordance with paragraph 5.9.

11.4.5.9 In an emergency affecting safety of persons or property, Contractor shall act, at Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by Contractor on account of an emergency shall be determined as provided in this Article 11.

11.5 The term Cost of the Work shall not include any of the following:

11.5.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor whether at the site or in Contractor's principal or a branch office, for general administration of the Work and not specifically included in the agreed-upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4, all of which are to be considered administrative costs covered by the Contractor's Fee.

11.5.2 Expenses for Contractor's principal and branch offices other than Contractor's office at the site.

11.5.3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

11.5.4 Cost of premiums for all Bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.8 above).

11.5.5 Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including, but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

11.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.
11.6 **Contractor's Fee** - The Contractor's Fee allowed to Contractor for overhead and profit shall be determined as follows:

11.6.1 A mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2 A fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1 For costs incurred under paragraphs 11.4.1 and 11.4.2, the Contractor's Fee shall be ten percent;

11.6.2.2 For cost incurred under paragraph 11.4.3, the Contractor's Fee shall be ten percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to Contractor on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3 No fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5, and 11.5;

11.6.2.4 The amount of credit to be allowed by Contractor to Owner for any such change that results in a net decrease in cost will be the amount of the actual net decrease; and

11.6.2.5 When both additions and credits are involved in any one change, the adjustment in Contractor's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7 Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, Contractor will submit in form acceptable to Project Consultant an itemized cost breakdown together with supporting data.

11.8 **Cash Allowances** - It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to Project Consultant. Contractor agrees that:

11.8.1 The allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2 Contractor's costs for unloading and handling on the site, labor, installation costs, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. The overhead and profit shall be calculated as shown on the Proposal Form for the appropriate Proposal items. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by Project Consultant to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.
ARTICLE 12: CHANGE OF CONTRACT TIME

12.1 The Contract Time may be changed only by Change Order or by written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to Project Consultant promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless Project Consultant allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by Project Consultant in accordance with paragraph 9.10 if Owner and Contractor cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2 If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner, the Project Consultant, any of their employees, any separate contractor employed by the Owner, or by changes ordered in the Work, labor disputes, fire, unusual delay in transportation, adverse weather conditions, unavoidable casualties, unavailable materials, any causes beyond the Contractor's control, delay authorized by the Owner pending arbitration, or by any other cause which the Project Consultant determines may justify the delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Project Consultant may determine.

12.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages including, but not limited to, fees and charges of Project Consultant, architects, attorneys, and other professionals and court costs for delay by either party.

12.4 Contractor agrees that said Work shall be prosecuted regularly, diligently, and uninterrupted at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed by and between Contractor and Owner that the time for the completion of the Work described herein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality and Owner's providing access to the work areas.

ARTICLE 13: WARRANTY AND GUARANTEE: TESTS AND INSPECTIONS: CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

13.1 Warranty and Guarantee - Contractor warrants and guarantees to Owner and Project Consultant that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to Contractor. All Defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

13.2 Access to Work - Project Consultant and Project Consultant's representatives, other representatives of Owner, testing agencies, and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their
observation, inspecting, and testing. Contractor shall provide proper and safe conditions for such access.

13.3 **Tests and Inspections** - Contractor shall give Project Consultant timely notice of readiness of the Work for all required inspections, tests, or approvals.

13.4 If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested, or approved, Contractor shall assume full responsibility therefor, pay all costs in connection therewith, and furnish Project Consultant the required certificates of inspection, testing, or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner's or Project Consultant's acceptance of a Supplier of materials or equipment proposed to be incorporated into the Work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation into the Work. The cost of all inspections, tests, and approvals in addition to the above, which are required by the Contract Documents, shall be paid by Owner (unless otherwise specified).

13.5 All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to Owner and Contractor (or by Project Consultant, if so specified).

13.6 If any Work (including the work of others) that is to be inspected, tested, or approved is covered without written concurrence of Project Consultant, it must, if requested by Project Consultant, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Project Consultant timely notice of Contractor's intention to cover the same and Project Consultant has not acted with reasonable promptness in response to such notice.

13.7 Neither observation by Project Consultant nor inspections, tests, or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

13.8 **Uncovering Work** - If any Work is covered contrary to the written request of Project Consultant, it must, if requested by Project Consultant, be uncovered for Project Consultant's observation and replaced at Contractor's expense.

13.9 If Project Consultant considers it necessary or advisable that covered Work be observed by Project Consultant or inspected or tested by others, Contractor, at Project Consultant's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing, as Project Consultant may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is Defective, Contractor shall bear all direct and indirect costs of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, (including but not limited to, fees and charges of Project Consultant, architects, attorneys, and other professionals), and Owner shall be entitled to an appropriate decrease in the Contract Price and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be Defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction.
13.10 **Owner May Stop the Work** - If the Work is Defective or Contractor fails to supply sufficient skilled workers or suitable materials or equipment or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may verbally order Contractor to stop the Work, or any portion thereof, and follow up with written confirmation within seven (7) days, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of Contractor or any other party.

13.11 **Correction or Removal of Defective Work** - If required by Project Consultant, Contractor shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Project Consultant, remove it from the site and replace it with non-Defective Work. Contractor shall bear all direct and indirect costs of such correction or removal (including, but not limited to, fees and charges of Project Consultant, architects, attorneys, and other professionals) made necessary thereby.

13.12 **One-Year Correction Period** - If, within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such Defective Work or, if it has been rejected by Owner, remove it from the site and replace it with non-Defective Work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement (including, but not limited to, fees and charges of Project Consultant, Project Consultant's consultants, architects, attorneys, and other professionals) will be paid by Contractor. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date, if so provided in the Specifications or by Written Amendment.

13.13 **Acceptance of Defective Work** - If, instead of requiring correction or removal and replacement of Defective Work, Owner (and, prior to Project Consultant's recommendation of final payment, also Project Consultant) prefers to accept it, Owner may do so. Contractor shall bear all direct and indirect costs attributable to Owner's evaluation of and determination to accept such Defective Work (such costs to be approved by Owner and Project Consultant as to reasonableness and to include, but not be limited to, fees and charges of Project Consultant, Project Consultant's consultants, architects, attorneys, and other professionals). If any such acceptance occurs prior to Project Consultant's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.14 **Owner May Correct Defective Work** - If Contractor fails, within a reasonable time after written notice of Project Consultant to proceed, to correct Defective Work or to remove and replace rejected Work as required by Project Consultant in accordance with paragraph 13.11 or if Contractor fails to perform the Work in accordance with the
Contract Documents or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days' written notice to Contractor and Contractor's Surety, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph, Owner shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the site, and incorporate into the Work all materials and equipment for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Project Consultant, agents, and employees such access to the site as may be necessary to enable Owner to exercise the rights and remedies under this paragraph. All direct and indirect costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Project Consultant, and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, Owner may make a claim therefor as provided in Article 11. Such direct and indirect costs will include but not be limited to fees and charges of Project Consultants, architects, attorneys, and other professionals, all court and arbitration costs, and all costs of repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's Defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by Owner of Owner's rights and remedies hereunder.

ARTICLE 14: PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 Schedule of Values - The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Project Consultant.

14.2 Application for Progress Payment – Not Used

14.3 Contractor's Warranty of Title - Contractor warrants and guarantees that title to all Work, materials and equipment covered by an Application for Payment, whether incorporated into the Project or not, will pass to Owner no later than the time of payment, free and clear of all Liens.

14.4 Review of Applications for Progress Payment - Project Consultant will, by the first day of the following month, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Project Consultant's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Twenty-five (25) days after presentation of the Application for Payment with Project Consultant's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due will be paid by Owner to Contractor.

14.5 Project Consultant's recommendation of any payment requested in an Application for Payment will constitute a representation by Project Consultant to Owner, based on Project Consultant's on-site observations of the Work in progress as an experienced and qualified design professional and on Project Consultant's review of the Application for Payment and the accompanying data and schedules, that the Work has progressed to
the point indicated; that, to the best of Project Consultant's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.9, and to any other qualifications stated in the recommendation); and that Contractor is entitled to payment of the amount recommended. However, by recommending any such payment, Project Consultant will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to Project Consultant in the Contract Documents or that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or Owner to withhold payment to Contractor.

14.6 Project Consultant's recommendation of final payment will constitute an additional representation by Project Consultant to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7 Project Consultant may refuse to recommend the whole or any part of any payment if, in Project Consultant's opinion, it would be incorrect to make such representations to Owner. Project Consultant may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspection or tests, nullify any such payment previously recommended, to such extent as may be necessary in Project Consultant's opinion to protect Owner from loss because:

14.7.1 The Work is Defective, or completed Work has been damaged requiring correction or replacement.

14.7.2 The Contract Price has been reduced by Written Amendment or Change Order.

14.7.3 Owner has been required to correct Defective Work or complete Work in accordance with paragraph 13.14.

14.7.4 Project Consultant has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9, inclusive.

Owner may refuse to make payment of the full amount recommended by Project Consultant because claims have been made against Owner on account of Contractor's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling Owner to a set-off against the amount recommended, but Owner must give Contractor immediate written notice (with a copy to Project Consultant) stating the reasons for such action.

14.8 Substantial Completion - When Contractor considers the entire Work or any substantial part of the Work ready for its intended use, Contractor shall notify Owner and Project Consultant in writing that all or part of the Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Project Consultant issue a certificate of Substantial Completion. Within a reasonable time thereafter, Contractor and Project Consultant shall make an inspection of the Work to determine the status of completion. If Project Consultant does not consider the Work substantially complete, Project Consultant will notify Contractor in writing giving the reasons therefor.
If Project Consultant considers the Work substantially complete, Project Consultant will prepare and deliver to and review with the Owner a tentative certificate of Substantial Completion, which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected, if any, before final payment. At the time of delivery of the tentative certificate of Substantial Completion, Project Consultant will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, heat, utilities, insurance, and warranties. Project Consultant will issue the definitive certificate of Substantial Completion 7 to 14 days after delivery of tentative certificate to Owner and Contractor. Unless Owner and Contractor agree otherwise in writing and so inform Project Consultant prior to Project Consultant's issuing the definitive certificate of Substantial Completion, Project Consultant's aforesaid recommendation will be binding on Owner and Contractor until final payment. Contract Time stops with issuance of definitive certificate of Substantial Completion. The Contractor shall maintain the part of the Work judged to be substantially complete for a minimum period of thirty (30) days following the date of Substantial Completion.

14.9 Owner shall have the right to exclude Contractor from the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

14.10 Partial Utilization - Use by Owner of any finished part of the Work, which has specifically been identified in the Contract Documents, or which Owner, Project Consultant, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1 Owner at any time may request Contractor in writing to permit Owner to use any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If Contractor agrees, Contractor will certify to Owner and Project Consultant that said part of the Work is substantially complete and request Project Consultant to issue a certificate of Substantial Completion for that part of the Work. Contractor at any time may notify Owner and Project Consultant in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Project Consultant to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, Contractor and Project Consultant shall make an inspection of that part of the Work to determine its status of completion. If Project Consultant does not consider that part of the Work to be substantially complete, Project Consultant will notify Owner and Contractor in writing, giving the reasons therefor. If Project Consultant considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2 Owner may at any time request Contractor in writing to permit Owner to take over operation of any such part of the Work, although it is not substantially complete. A copy of such request will be sent to Project Consultant and, within a reasonable time thereafter, Contractor and Project Consultant shall
make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If Contractor does not object in writing to Owner and Project Consultant that such part of the Work is not ready for separate operation by Owner, Project Consultant will finalize the list of items to be completed or corrected and will deliver such list to Owner and Contractor, together with a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that part of the Work which will become binding upon Owner and Contractor at the time when Owner takes over such operation (unless they shall have otherwise agreed in writing and so informed Project Consultant). During such operation and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3 No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.14 in respect of property insurance.

14.11 Final Inspection - At the end of the minimum thirty (30) days' maintenance period and upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Project Consultant will make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to remedy such deficiencies. Contractor shall provide proof of publication of notice of completion to the Owner, by affidavit of the publisher and a printed copy of the notice published.

14.12 Final Application for Payment - After Contractor has completed all such corrections to the satisfaction of Project Consultant, and completed the thirty (30) days' maintenance period requirements of paragraph 14.8 and delivered all maintenance and operation instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents, and after Project Consultant has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full; an affidavit of Contractor that the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed and that all payrolls, material and equipment bills, and other indebtedness connected with the Work, for which Owner or Owner's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

14.13 Final Payment and Acceptance - If, on the basis of Project Consultant's observation of the Work during construction and final inspection and Project Consultant's review of the
final Application for Payment and accompanying documentation - all as required by the Contract Documents, Project Consultant is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Project Consultant will, within ten days after receipt of the final Application for Payment, indicate in writing Project Consultant's recommendation of payment and present the Application to Owner for payment. Thereupon, Project Consultant will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 14.16. Otherwise, Project Consultant will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. Thirty (30) days after presentation to Owner of the Application and accompanying documentation, in appropriate form and substance and with Project Consultant's recommendation and notice of acceptability, the amount recommended by Project Consultant will become due and will be paid by Owner to Contractor.

14.14 If, through no fault of Contractor, final completion of the Work is significantly delayed and if Project Consultant so confirms, Owner shall, upon receipt of Contractor's final Application for Payment and recommendation of Project Consultant and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement and if Bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Project Consultant with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

14.15 Contractor's Continuing Obligation - Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Project Consultant, nor the issuance of a certificate of Substantial Completion, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by Owner, nor any act of acceptance by Owner, nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by Project Consultant pursuant to paragraph 14.13, nor any correction of Defective Work by Owner will constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

14.16 Waiver Of Claims - The making and acceptance of final payment will constitute:

14.16.1 A waiver of all claims by Owner against Contractor, except claims arising from unsettled Liens, from Defective Work appearing after final inspection pursuant to paragraph 14.11, or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by Owner of any rights in respect of Contractor's continuing obligations under the Contract Documents; and

14.16.2 A waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled.
ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.1 Owner May Suspend Work - Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor and Project Consultant, which will fix the date on which Work will be resumed.

15.2 Owner May Terminate - Upon the occurrence of any one or more of the following events:

15.2.1 If Contractor commences a voluntary case under any chapter of the Bankruptcy Code (Title II, United States Code), as now or hereafter in effect, or if Contractor takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2 If a petition is filed against Contractor under any chapter of the Bankruptcy Code, as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against Contractor under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3 If Contractor makes a general assignment for the benefit of creditors;

15.2.4 If a trustee, receiver, custodian, or agent of Contractor is appointed under applicable law or under contract, whose appointment or authority to take charge of property of Contractor is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of Contractor's creditors;

15.2.5 If Contractor admits in writing an inability to pay its debts generally as they become due;

15.2.6 If Contractor persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9, as revised from time to time);

15.2.7 If Contractor disregards Laws or Regulations of any public body having jurisdiction;

15.2.8 If Contractor disregards the authority of Project Consultant; or

15.2.9 If Contractor otherwise violates in any substantial way any provisions of the Contract Documents;

Owner may, after giving Contractor (and the Surety, if there be one) seven (7) days' written notice and to the extent permitted by Laws and Regulations, terminate the services of Contractor; exclude Contractor from the site and take possession of the Work and of all Contractor's tools, appliances, and construction equipment and machinery at the site and use the same to the full extent they could be used by
Contractor (without liability to Contractor for trespass or conversion); incorporate into the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere; and finish the Work as Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct or indirect costs of completing Work (including, but not limited to, fees and charges of Project Consultant, architects, attorneys, and other professionals and court costs), such excess shall be retained by Owner. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner will be approved as to reasonableness by Project Consultant and incorporated into a Change Order; but when exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

15.3 Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

15.4 Upon seven (7) days' written notice to Contractor and Project Consultant, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement.

15.5 Contractor May Stop Work Or Terminate - If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) days by Owner or under an order of court or other public authority or Project Consultant fails to act on any Application for Payment within thirty (30) days after it is submitted or Owner fails for thirty (30) days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days' written notice to Owner and Project Consultant, terminate the Agreement and recover from Owner payment for all Work executed and any expense sustained, plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if Project Consultant has failed to act on an Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may, upon seven (7) days' written notice to Owner and Project Consultant, stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve Contractor of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with Owner.

ARTICLE 16: MISCELLANEOUS

16.1 Giving Notice - Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended or if delivered to or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

16.2 Computation of Time:

16.2.1 When any period of time is referred to in the Contract Documents by shifts, it will be computed to include the first and the last day of such period. Saturdays and Sundays shall be included.

16.2.2 A calendar day of twenty-four (24) hours measured from midnight to the next midnight shall constitute a day.
16.3 **General** - Should Owner or Contractor suffer injury or damage to person or property because of any error, omission, or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

16.4 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees, and obligations imposed upon Contractor by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3, and 15.2 and all of the rights and remedies available to Owner and Project Consultant thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, and right and remedy to which they apply. All representations, warranties, and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

16.5 **Arbitration** - All claims, disputes, and other matters in question between Contractor and Owner arising out of or relating to the Contract Documents or the breach thereof, except as provided in paragraph 9.5 with respect to the Project Consultant's decisions on matters provided in the Contract Agreement, and except for claims that have been waived by the making or acceptance of final payment as provided by Paragraphs 14.16.1 and 14.16.2, inclusive, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, unless the parties mutually agree otherwise. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation, by joinder, or in any other manner, the Project Consultant, or his employees or consultants. No arbitration shall include by consolidation, by joinder, Owner, the Contractor, and any other persons substantially involved in a common question of fact or law, whose presence is required if complete relief is to be accorded in the arbitration. No person other than the Owner or the Contractor shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. The foregoing agreement to arbitrate and any other agreement to arbitrate with an additional person or persons duly consented to by the parties to the Owner-Contractor Agreement shall be specifically enforceable under the prevailing arbitration law. Each party shall bear its own expenses of arbitration. The arbitration may award prejudgment interest but shall not award punitive damages. In any court action to enforce an arbitration award, the prevailing party shall be entitled to recover expenses incurred, court costs, and a reasonable attorney's fee.

16.6 Notice of the demand for arbitration shall be filed in writing with the other party to the Owner-Contractor Agreement and with the American Arbitration Association, and a copy shall be filed with the Project Consultant and the Construction Agreement. The demand for arbitration shall be made within sixty (60) days after decision under paragraph 9.10, and in all other cases within reasonable time after the claim, dispute, or other matter in question has arisen; and in no event shall it be made after the date when institution of
legal or equitable proceedings based on such claim, dispute, or other matter in question would be barred by the applicable statute of limitations.

16.7 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any arbitration proceedings, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.
801. SCOPE OF WORK

The scope of the project at the OWNER Project includes the following:

1) **HPISD Administration Building**

   The abatement of asbestos-containing floor tile, floor tile mastic, window caulk and window glazing compound as indicated on the Reference Drawings.

2) **Highland Park High School**

   The abatement of asbestos-containing floor tile and mastic (beneath carpet), chalkboard and mastic, ceiling tile mastic, thermal system insulation and window caulk and glazing compound as indicated on the Reference Drawings.

3) **Armstrong Elementary School**

   The abatement of asbestos-containing thermal system insulation, ceiling and wall tile mastic, exterior door caulk, and window caulk and glazing compound as indicated on the Reference Drawings.

802. TIME OF COMPLETION

The work which the Contractor is required to perform under this Contract shall be commenced at the time stipulated by the OWNER in the NESHAP 10-day notification and shall be fully completed as stipulated in the original (or amended) NESHAP 10-day notification.

803. LIQUIDATED DAMAGES

Not Used

804. TAXES

OWNER qualifies for exemption from State and Local Sales Tax pursuant to the provisions of Chapter 151 of the Tax Code of the State of Texas. The Contractor may claim exemption from payment of applicable State and Local Sales Taxes by complying with such procedures as may be prescribed by the State Comptroller of Public Accounts. However, the Contractor shall pay all necessary local, county, and state taxes, compensation tax, social security and withholding payments as required by law. He shall indemnify and save harmless the OWNER of and from all claims and demands made by failure of the Contractor or Subcontractor to comply with the provisions of any or all said laws and amendments.

805. CONTRACTOR’S AND SUBCONTRACTOR’S PUBLIC LIABILITY, VEHICLE LIABILITY, AND PROPERTY DAMAGE INSURANCE
As required under Article 5 of the General Conditions Contractor shall maintain in a company acceptable to Owner and Project Consultant such insurance as will protect the Contractor, Owner, Project Consultant, and their officers and employees and Project Consultant's subsidiaries, affiliated companies, and their officers and employees, as additional insured, from claims resulting from any and all operations under the Contract of which these supplements are a part. No "Claims Made" policies will be accepted. Policies shall be "All Occurrence" with no "Sunset Clause" stated in the policy and on the insurance certificate.

The limits of liability for the liability insurance required by the General Conditions shall provide coverage for not less than the following amounts, or greater where required by law:

1. **Worker's Compensation**
   - Applicable Federal & State Employer's Liability
   - Statutory $1,000,000/$1,000,000/$1,000,000

2. **Comprehensive General Liability**
   - (each occurrence and aggregate)
   - Bodily Injury & Property Damage (combined) $5,000,000 (min.)

3. **Comprehensive Automobile Liability**
   - (each occurrence and aggregate)
   - Bodily Injury & Property Damage (combined) $1,000,000 (min.)

4. **Asbestos Abatement Insurance**
   - Proposals shall be submitted with an Occurrence Policy (with no sunset clause) in the amounts stated below for Occurrence and aggregate coverage.
   - Asbestos Occurrence Insurance:
     - Each Occurrence and Aggregate $5,000,000 (min.)

The Contractor shall either (1) require each of his subcontractors to procure and to maintain occurrence-type insurance including, Subcontractor's Liability and Property Damage of the type and in the same amounts as specified in the preceding paragraph, or (2) insure the activities of his subcontractors in his own Occurrence policy and Liability and Property Damage insurance. Whichever the case may be, the Contractor shall be responsible for ensuring that all of his insurance policies satisfy the appropriate requirements of the Asbestos Abatement Technical Specifications.

806. **COMMUNICATIONS**

a) All notices, demands, requests, instructions, approvals, Proposals and claims must be in writing.
b) Any notice to or demand upon the Contractor shall be sufficiently given if delivered to the address stated on the signature page of the Agreement (or at such other office as the Contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission or pre-paid commercial express delivery, in each case addressed to such office.

c) All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to OWNER and any notice to or demand upon the Owner shall be sufficiently given if so delivered, or if deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission or pre-paid commercial express delivery to said Owner at such address, or to such other representatives of the Owner or to such other address as the Owner may subsequently specify in writing to the Contractor for such purpose.

d) Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post, or (in the case of telegrams) at the time of actual receipt, as the case may be.

e) This section does not apply to decisions given pursuant to Section 119(b) of this contract.

807.  JOB OFFICES AND BUILDINGS

a) The Contractor and his subcontractors may maintain such office and storage facilities on the Site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the Site. The Owner shall be consulted with regard to locations.

b) Upon completion of the Work, or as directed by the Owner, the Contractor shall remove all such temporary structures and facilities from the Site, same to become his property, and leave the Site of the work in the condition required by the Contract.

808.  PARTIAL USE OF SITE IMPROVEMENTS:

a) The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated Substantially Complete, provided such occupancy or use is consented to by the Owner's insurer and authorized by the public authorities having jurisdiction over the Work. Under certain conditions, the Owner may occupy or use any completed or partially completed portion of the Work even though the completed or partially completed portion of the Work has not been designated Substantially Complete. Those conditions being that the Contractor and Owner 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 mutually agreed to the period for correction of the Work and the commencement of warranties required by the Contract Documents. Such agreement will take affect with the concurrence of the Owner’s insurer and the public authorities having jurisdiction over the Work.

b) 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.
c) 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.

809. WORK BY OTHERS

Work by others should be completed as specified in the Asbestos Abatement Technical Specifications and Plans. Contractor is cautioned that subcontractors will not be acceptable unless approved in writing by the Project Consultant and the Owner.

810. UNIT PRICES

As shown in Proposal.

811. ACCESS AND PASSAGE

The Contractor shall ensure that access to neighboring properties are not blocked for excessive periods of time, and shall take such steps as are necessary to expedite work in these areas, provide temporary means for passage to and from the properties, or otherwise avoid prolonged interference with such access and passage.

812. MATERIALS AND WORKMANSHIP

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. All materials and workmanship shall adhere to any applicable Texas Historical Commission requirements.

813. WARRANTY OF WORKMANSHIP AND MATERIALS

a) Neither the final certificate of payment nor provisions in the Contract nor partial or entire use of the Work embraced in this Contract by the or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the date of final acceptance of the Work with the exception being any specific contract activities covered by occurrence insurance herein this contract and/or the Asbestos Abatement Technical Specifications.

b) Contractor will obtain warranties, executed in duplicate by the responsible subcontractors, material suppliers, and manufacturers, leaving the date of beginning the time of warranty until the date of final acceptance of the Work.

c) Contract shall verify that all warranty forms are in proper form and contain full information.

d) When required, Contractor shall co-execute warranties.
e) Contractor shall retain all original warranties and bonds until the time specified for submission to the ’s contract administrator.
   When submitting said original warranties and bonds to the ’s contract administrator, Contractor will bind the documents in a commercial quality 8½” X 11”, three ring binder(s) with hardback, plastic covers.

f) Other warranties shall be as required in the Asbestos Abatement Technical Specifications.

814. STORAGE OF MATERIALS

The Contractor shall be responsible for the receipt and proper storage of all materials for the project, and shall store such materials in locations specified by OWNER. Materials may not be stored in locations which would create interference with neighboring land or property owners, or interference with vehicle traffic. The Contractor shall also be responsible for security of his materials, and shall provide at his own discretion and expense such secure storage space, watchmen, or other security measures which he deems prudent and necessary. Storage of ACM waste shall be in accordance with current state and federal regulations.

815. SCHEDULING OF WORK

The Contractor shall furnish a schedule of work to OWNER’s designated contract administrator and the Project Consultant. The schedule shall be revised as needed to reflect actual progress on the project. The schedule of work shall indicate the days when Asbestos Abatement activities will take place.

The asbestos abatement schedule of work shall start and completed in accordance with the original (or amended) NESHAP 10-day notification. If any deviations are required, the Contractor shall immediately notify the Project Consultant. Failure to notify the Project Consultant shall cause the Contractor to be liable for any penalties, citations, court and legal costs, and any other related costs resulting from the intervention of regulatory agencies.

816. OTHER CONTRACTS

The Owner may award, or may have awarded other contracts for additional work, and the Contractor shall cooperate fully with such other Contractors, by scheduling his own work with that to be performed under other Contracts as may be directed by the Owner and/or Project Consultant. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled except in a situation(s) where current state and federal asbestos regulations would be violated were such an act(s) of interference not to occur. In such situation(s), the Contractor shall immediately inform the Project Consultant, verbally followed by written notification.

817. MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts or neglect on the part of the Contractor, any other Contractor or any subcontractor shall suffer loss or damage on the work, the Contractor shall settle with such other contractor or subcontractor by agreement or arbitration. If such other Contractor or subcontractor shall assert any claim against the Owner and/or Project Consultant on account of any damage alleged to have been so sustained, the Owner and/or Project Consultant will notify the Contractor, who shall defend at his own expense any suit based upon such claim, and, if any judgment or claims against the Owner and/or Project Consultant shall be allowed, the
Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith.

818. DAMAGES TO A HISTORICAL BUILDING

THIS SECTION NOT USED

819. CONTRACT DOCUMENTS AND DRAWINGS

If requested, the through the Project Consultant will, without charge, furnish the contractor awarded the contract with one (1) copy of the Contract Documents, including the Asbestos Abatement Technical Specifications and Drawings. Additional copies requested by the Contractor will be furnished at cost.

820. PERMITS AND CODES

a) Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, and licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when Proposals are received or negotiations concluded. Texas Department of Health Asbestos Reporting Unit fees (ARUs) will be paid by Owner.

b) 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.

c) The Contractor shall indemnify and save harmless the Owner and the Project Consultant from any damages on account of settlements or the loss of lateral support or adjoining property and from all loss or expense and all damages for which the OWNER and the Project Consultant may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises. Other indemnification shall be as required in the Abatement Technical Specifications.

821. COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS

In compliance with the Clean Air Act, as amended, 42 U.S.C. 1857 et. seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C 1251 et. seq., and the regulations of the Environment Protection Agency with respect thereto the Contractor agrees that:

(1) Any facility to be utilized in the performance of this Contract or any subcontract shall not be a facility listed on the EPA list of Violating Facilities pursuant to 40 CFR 15.20.

(2) He/she shall comply with all applicable local, state and federal environmental requirements including but not limited to Section 114 of the Clean Air Act, as amended (42 USC 1857c-8), Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1251), EPA 40 CFR 61 and 763, OSHA 29 CFR 1910, OSHA 20 CFR 1926, and the Texas Asbestos Health Protection Rules 23 TAC 295.
822. GOVERNING LAW

This Contract shall be governed by the law of the place where the Project is located.

823. WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual or 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 pre-paid commercial express delivery to the last business address known to the party giving notice.

824. RIGHTS AND REMEDIES

a) 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.

b) No action or failure to act by the Project Consultant 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 thereunder, except as may be specifically agreed to in writing.

825. EQUAL EMPLOYMENT OPPORTUNITY

a) The Contractor will not discriminate against any employee or the applicant for employment because of race, color, disability, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; lay off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

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, color, disability, religion, sex, or national origin.

c) The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Contract so that such provisions will be binding upon each Subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

d) Contractors are encouraged to participate in voluntary associations which assist in fulfilling their affirmative action obligations.

e) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents.

826. ACCOMMODATIONS FOR NON-ENGLISH SPEAKING PERSONNEL
When Contractor’s work crews consist of personnel whose predominant language is not English, Contractor shall insure:

1. All training respiratory, supervisor, worker, etc., is conducted in predominant language. Contract shall submit proof of all documents and proof that workers passed appropriate test(s).
2. All instructions and safety procedures and emergency instructions shall be posted in both English and Spanish. Contractor shall have an interpreter fluent in English and dominant language for communications between the Project Consultant and workers.
3. All workers shall be under direct supervision of fluent interpreters especially in the regulated area(s).

827. AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS

a. The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified disabled individuals without discrimination based upon their physical or mental disability in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

b. The Contractor will include the provisions of this clause in every subcontract or purchase order in connection with this project.

828. LOCAL OPPORTUNITY PLAN

Each Proposer shall submit a Local Opportunity Plan as a part of the Proposal proceedings. A form is furnished for this purpose.

The Owner is requesting that the Contractor make every feasible effort to recruit and utilize local subcontractors, businesses, laborers, and craftsmen on this project. This is not a mandatory requirement. However, the Owner encourages the Contractor to consider local participation if that participation can be effected in a cost-effective manner.

829. NON-SEGREGATED FACILITIES

The Contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Contractor covenants that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this paragraph the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise.
ASBESTOS ABATEMENT
TECHNICAL SPECIFICATIONS

DIVISION 1 & DIVISION 2

SECTION 00900
Section 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

The project name is “University Park Elementary School Pre-Demolition Abatement” as shown on the Contract Documents prepared by the Project Consultant. The specifications are dated February 28, 2017.

All phases of the Work shall be executed by skilled craftsmen experienced in their respective trades. This section includes a general scope of work, while Division 2, Section 02081, includes a description of procedures for abatement in each work area.

Contractor may subcontract any phase or portion of the Work. However, such subcontract shall not relieve Contractor from responsibility for enforcing the use of all required safety equipment and supplies by the Subcontractor and his employees providing any phase of the Work in the work areas. Contractor shall require and verify that all materials and methods used by Subcontractors are consistent with materials and methods for established and safe asbestos removal procedures and consistent with the Contract Documents.

1.1 RELATED DOCUMENTS

Reference Drawings and General provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirements, apply to work of this section. Additional sections include:

Division 2 - Site Work

- Section 02081 - Removal of Asbestos-Containing Material
- Section 02084 - Disposal of Asbestos-Containing Waste Material

1.2 SUMMARY OF WORK

The abatement of asbestos-containing chalkboard and mastic, ceiling tile mastic, roof flashing, window caulk, pipe insulation and pipe insulation fittings, flooring and mastic, and wallboard walls and ceilings as indicated on the Reference Drawings.

General and Administrative Requirements:

- Section 01013 - Summary of the Work
- Section 01043 - Project Coordination
- Section 01091 - Definitions and Standards
- Section 01301 - Submittals
- Section 01601 - Materials and Equipment
- Section 01632 - Product Substitutions
- Section 01701 - Project Closeout

Abatement Work:

- Section 01092 - Codes, Regulations, and Standards - Asbestos Abatement: sets forth governmental regulations and industry standards, which are included and incorporated herein by reference and made a part of the Specifications. This section also sets forth
those notices and permits which are known to Owner and which either must be applied for and received or given to governmental agencies before start of work.

Section 01410 - Air Monitoring - Test Laboratory Services: describes air monitoring by Owner so that the building areas beyond the work areas will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of Contractor.

Section 01503 - Temporary Facilities - Asbestos Abatement: sets forth the support facilities needed, such as electrical and plumbing connections for the decontamination units and office space for Project Consultant.

Section 01513 - Temporary Pressure Differential and Air Circulation System: sets forth the procedures to set up pressure differential isolation and ventilation of the work areas.

Section 01526 - Temporary Enclosures: details the requirements for the sheet plastic barriers isolating the work areas from the other areas of the buildings.

Section 01530 – Mini-Containment/Glovebag removal: details the requirements for preparation of work barriers and procedures for glovebag abatement techniques.

Section 01560 - Worker Protection: describes the equipment and procedures for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.

Section 01562 - Respiratory Protection: sets forth the procedures and equipment required for adequate protection against inhalation of airborne asbestos fibers.

Section 01563 - Decontamination Units: explains the setup and operation of the personnel and material decontamination units.

Decontamination of the Work Area:

Section 01701 - Project Closeout - Asbestos Abatement: details the closeout procedures to end the Project once abatement work is complete, including final paperwork requirements.

Section 01711 - Project Decontamination: describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a work area.

Section 01714 - Work Area Clearance: describes the analytical methods used to determine if the work area has been successfully cleaned of contamination.

Asbestos Removal Work Procedures:

Section 02081 - Removal of Asbestos-Containing Material
Section 02084 - Disposal of Asbestos-Containing Waste Material
1.3 WORK PLAN

Submit detailed plans of the procedures proposed for use in complying with the requirements of these Specifications. Include in the plans the locations and layouts of decontamination areas; the sequencing of asbestos work; the interface of trades involved in the performance of work; methods to be used to assure the safety of building occupants and visitors to the site; the disposal plan, including location of approved disposal site; and a detailed description of the methods to be employed to control pollution. Expand upon the use of the portable high-efficiency particulate air (HEPA) ventilation system, closing out of the building's heating, ventilation, and air conditioning (HVAC) system, method of removal to prevent visible emissions in work areas, and bagging of removed asbestos debris. The plan must be approved by the Project Consultant prior to commencement of work.

1.4 INSPECTION

Prior to commencement of work, inspect areas in which work will be performed. List damage to structure, surfaces, equipment, or surrounding properties noted during the inspection that could be misconstrued as damage resulting from the Work. Submit to Project Consultant prior to starting work.

1.5 POTENTIAL ASBESTOS HAZARD

Disturbance or dislocation of asbestos-containing materials may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants. Apprise all workers, supervisory personnel, Subcontractors, and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures that must be followed.

Where, in the performance of the Work, workers, supervisory personnel, Subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard 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 STOP WORK

If Owner or Project Consultant presents a written Stop Work Order, immediately and automatically stop all work. Do not recommence work until authorized by Project Consultant.

1.7 CONTRACTOR USE OF PREMISES

Limit use of the premises to the Work indicated, so as to allow for Owner occupancy and use by other trades required in the buildings. Confine operations at the site to the areas permitted under the Contract.

Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the Work while engaged in project construction.
Keep existing driveways and entrances serving the premises clear and available to Owner and his employees at all times. Do not use these areas for parking or storage of materials.

Do not encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas designated by Owner. If additional storage is necessary, obtain and pay for such storage off-site.

Lock automotive-type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place or accessible to unauthorized persons.

Maintain existing buildings in a safe and weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the buildings and their occupants during the construction period.

Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste, rubbish, or construction debris.

Smoking or open fires will not be permitted within any of the buildings on the premises.

Except for toilet rooms designated by Owner for use by Contractor's personnel, use of existing toilets within the buildings, by Contractor and his personnel, will not be permitted.

1.8 LOADS AND STRESSES

Contractor shall have full responsibility for preventing overstresses of any structure or any part or member of the structure during the Work. Contractor shall fully check the effect of the operation in this regard and shall provide all support necessary.

1.9 VERIFICATION OF QUANTITIES

It is the responsibility of Contractor to verify all ACM and quantities of materials in each work area. Contractor shall fully inform himself of the conditions relating to construction of the Work and employment of labor thereon. Failure to do so will not relieve a successful Proposer of his obligation to furnish all material, equipment, and labor necessary to carry out the provisions of the Contract.

1.10 OWNER OCCUPANCY

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

Submit all required documents, identified in Section 01301 - Submittals, to Project Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner and Project Consultant.

1.12 PROJECT SCHEDULE

The project is scheduled to begin on the date indicated in the Authorization to proceed, and shall be completed as specified on the Proposal Form. Contractor shall submit his work schedule to the Owner for approval. Work schedule shall be coordinated based on the availability of the work areas and whether or not the building is occupied. Work may need to occur during weekend hours.

Removal of asbestos-containing waste material from temporary storage inside containment to waste dumpsters shall be approved by the Owner or shall be conducted as otherwise specifically approved in writing. During transportation of all waste materials, the asbestos bags, dumpsters, and warning labels will be visually obscured from public view.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01013
SECTION 01043 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings and General provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirement sections, apply to work of this section.

The General (Prime) Contractor for this Project has full authority and responsibility for the overall Project schedule. The Abatement Contractor shall cooperate fully with the General Contractor in scheduling and sequencing of work areas at the Project.

1.2 SUMMARY

This section specifies administrative and supervisory requirements for project coordination, including, but not necessarily limited to:

* Administrative and supervisory personnel
* Progress meetings
* Pre-Construction Conference
* Daily log
* Special reports
* Contingency plans
* Notifications to other entities at the job site

1.3 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

1.3.1 Project Superintendent

Contractor is required to provide a full-time on-site Project Superintendent who has the responsibility of developing schedules for all phases of the Work in the Contract Documents and coordinating them with Project Consultant, Subcontractors, material Suppliers, and other parties as necessary to assure a smooth and orderly transition between separate phases, timely placement of items and materials, complete cooperation between parties, and proper execution of the Work.

The Project Superintendent shall be experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for building and personnel, and disposal procedures. This person is Contractor's Representative, responsible for compliance with all applicable federal, state, and local regulations, particularly those relating to asbestos-containing materials.
1.3.2 Experience and Training

The Project Superintendent shall be properly trained and experienced with asbestos removal and related work. He shall know and enforce the use of all safety procedures and equipment. He shall be knowledgeable of all local, state, U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and National Institute for Occupational Safety and Health (NIOSH) requirements and guidelines, and he shall have had a minimum of five (5) years' on-the-job training in asbestos abatement procedures.

The Project Superintendent shall be accredited and licensed as stipulated below:

* Competent Person: The Project Superintendent is to be a Competent Person as required by OSHA in 29 Code of Federal Regulations (CFR) 1926.

* Accreditation: The Project Superintendent is to be accredited as an Asbestos Abatement Supervisor in accordance with the Asbestos Hazard Emergency Response Act (AHERA) regulation 40 CFR Part 763, Subpart E, Appendix C.

* Licensure: The Project Superintendent is to be a licensed contractor/supervisor by the Texas Department of State Health Services (TDSSH).

1.4 PROGRESS MEETINGS

In addition to specific coordination and preinstallation meetings for each phase of work and other regular project meetings held for other purposes, Project Consultant will hold general progress meetings on a weekly basis. Each entity then involved in planning, coordination, or performance of work is required to be properly represented at each meeting.

1.5 PRECONSTRUCTION CONFERENCE

An initial progress meeting, referred to as the Preconstruction Conference, will be conducted by Project Consultant prior to start of any work. The meeting will be held at an area designated by Owner at the project site, or as otherwise directed. The Project Superintendent, Owner, Project Consultant, Project Consultant, and other entities concerned with the asbestos abatement work shall attend this meeting.

This is an organizational meeting to review responsibilities and personnel assignments and will cover, at a minimum:

1. Organizational arrangement of Contractor's forces and personnel and those of Subcontractors, material Suppliers, and Project Consultant

2. Channels and procedures for communication

3. Construction schedule, devised by Contractor, including sequence of critical work

4. Procedures for processing of bulletins, field decisions, and Change Orders
5. Rules and regulations governing performance of the Work

6. Procedures for safety and first aid, security, quality control, housekeeping, and related matters

1.6 DAILY LOG

Maintain at the project site and submit to Project Consultant, on a daily basis, a daily log documenting the date and time of meetings, visitations, personnel entering and leaving the work area, special or unusual events, air monitoring tests and test results, inspection of work area, cleaning, encapsulation, and removal of waste materials from the work area. Submit three (3) copies of all daily logs, in chronological order as they pertain to each work area, at the final closeout of the Project as a project close-out submittal.

1.7 SPECIAL REPORTS

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

1.7.1 Reporting Unusual Events

When an event of unusual and significant nature occurs at the job site, prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known in advance or are predictable, advise Owner in advance at earliest possible date.

1.7.2 Reporting Accidents

Prepare and submit reports of significant accidents at the job site and anywhere else work is in progress. Record and document data and actions, complying with industry standards. For this purpose, a significant accident is defined to include events in which personal injury was sustained, property loss of substance was sustained, or the event posed a significant threat of loss or personal injury.

1.7.3 Reporting Discovered Conditions

When an unusual condition of the building is discovered during the Work (e.g., leaks, damage to structural members, corrosion of building materials), prepare and submit a special report indicating condition discovered.

1.8 CONTINGENCY PLAN

Prepare a contingency plan for emergencies, including fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgment of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination or work area isolation. Note that nothing in these Specifications should impede safe exiting or provision of adequate medical attention in the event of an emergency.
In the clean room of the personnel decontamination unit, post telephone numbers and locations of emergency services, including, but not limited to, fire, ambulance, doctor, hospital, police, power company, and telephone company.

1.9 NOTIFICATIONS

Notify other entities at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials, requirements relative to asbestos set forth in these Specifications, and applicable regulations.

Any individual at the job site may notify emergency service agencies if necessary without effect on this Contract or the Contract Sum.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01043
SECTION 01091 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

A substantial amount of specification language constitutes definitions for terms found in other Contract Documents. Certain terms used in the Contract Documents are defined in this section.

The provisions or requirements of Division 1 sections apply to the entire Work of the Contract and, where so indicated, to other elements which are included in the Project.

1.3 ADMINISTRATIVE DEFINITIONS

Definitions contained in this section are not necessarily complete but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

Approved: The term "approved," where used in conjunction with action by Project Consultant on Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of Project Consultant stated in the General and Supplementary Conditions. Such approval shall not release Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by Project Consultant," "requested by Project Consultant," and similar phrases. However, no implied meaning shall be interpreted to extend Project Consultant's responsibility into Contractor's area of construction supervision.

Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."

Indicated: The term "indicated" refers to graphic representations, notes, or schedules, 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 locate the reference; no limitation on location is intended except as specifically noted.

Install: The term "install" is used to describe operations at the project site, including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."

Installer: An "Installer" is an entity engaged by Contractor, either as an employee, Subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
Owner: The term "Owner" refers to the corporation, firm, or person with whom Contractor has entered into the Contract and for whom the Work is to be provided. Owner shall mean Highland Park Independent School District.

Project Consultant: The Project Consultant is a full-time representative of Owner at the job site with authority to stop the Work or issue Contract Directives upon verbal order if requirements of the Contract Documents are not met or if — in the sole judgment of the Project Consultant — Project Consultant, Owner, the interests of Owner, or the safety of any person or of Owner's property is jeopardized by the Work.

Project Site: The term "project site" refers to the space available to Contractor for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the project site as described in the Specifications not be identical to the description of the land upon which the Project is located.

Project Superintendent: The term "Project Superintendent" refers to Contractor's representative at the work site. This person shall meet the Competent Person requirements of OSHA in 29 CFR 1926.

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

Regulation: The term "Regulation" includes laws, statutes, ordinances, 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, whether they are lawfully imposed by authorities having jurisdiction or not.

Testing Laboratory: A "testing laboratory" 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.

1.4 DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT

Abatement: Procedures to control fiber release from asbestos-containing building materials. Includes securing the work area, removing the material, cleaning the area, and disposing of the material.

Accredited or Accreditation: A person or laboratory accredited in accordance with Section 206 of Title II of the Toxic Substances Control Act (TSCA).

Aerosol: A system consisting of particles, solid or liquid, suspended in air.

Air Cell: Insulation, normally used on pipes and ductwork, consisting of corrugated cardboard, which is frequently comprised of asbestos combined with cellulose or refractory binders.

Air Lock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area, consisting of two curtained doorways separated by a dead air space of four feet.

Air Monitoring: The process of measuring the fiber content of a specific volume of air.
Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 dynes or lower.

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

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

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

Asbestos-Containing Waste Material: Any material that is or is suspected of being, or any material contaminated with, an asbestos-containing material which is to be removed from a work area for disposal.

Asbestos Debris: Pieces of ACBM, identified by color, texture, or composition, or dust, if the dust is determined by an accredited inspector to be ACM.

Authorized Visitor: Owner, Project Consultant, testing lab personnel, emergency personnel, or a representative of any federal, state, or local regulatory or other agency having authority over the Project.

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

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

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

Clean Room: An uncontaminated area or room that is a part of the personnel decontamination unit, with provisions for storage of workers' street clothes and protective equipment.

Critical Barrier: Seal applied to openings connecting the abatement area with adjacent spaces; the seal will not be included in the containment and will be for the purpose of inhibiting the movement of fibers.

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

Demolition: The wrecking or taking out of any building component, system, finish, or assembly of a facility together with any related handling operations.
Disposal Bag: A properly labeled 6-mil thick leaktight plastic bag used for transporting asbestos waste from work site to disposal site.

Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent release of fibers.

* Bridging encapsulant: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.

* Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.


Encapsulation: Treatment of asbestos-containing materials with an encapsulant.

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

Equipment Decontamination Unit: That portion of a decontamination unit designed for controlled transfer of materials and equipment, typically consisting of a washroom and a holding area.

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

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

Fittings: Valves, joints, elbows, tees, and other nonplanar pipe surfaces.

Fixed Object: A unit of equipment or furniture in the work area that cannot be removed from the work area.

Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

Glovebag: A sack (typically constructed of 6-mil transparent polyethylene plastic) with inward-projecting long-sleeved gloves, designed to enclose an object from which an asbestos-containing material is to be removed.

Glovebag Technique: A method with limited application utilizing the glovebag for removing small amounts of friable ACM from heating, ventilation, and air conditioning (HVAC) ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces in a noncontained work area. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process.

HEPA Filter: A high-efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 micron in diameter.
HEPA Vacuum Equipment: High-efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 micron or larger.

High-Efficiency Particulate Air Filter (HEPA): Refers to a filtering system capable of trapping and retaining 99.97% of all monodispersed particles 0.3 µm in diameter or larger.

Log Book: A notebook or other book containing essential project data and daily project information.

Mini-Enclosure: A method with limited applications for removing small amounts of friable ACM; this method is typically used for small-scale, short-duration type projects.

Movable Object: A unit of equipment or furniture in the work area that can be removed from the work area.

Negative-Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Negative-Pressure Ventilation System: A pressure differential and ventilation system.


NIOSH: National Institute for Occupational Safety and Health.

OSHA: Occupational Safety and Health Administration.

Personnel Decontamination Unit: A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers and of materials and equipment. A decontamination enclosure system always contains at least one air lock.

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

Plastic Sheeting: Plastic sheet material of specified thickness used for protection of walls, floors, etc., and used to seal openings into the work area.

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

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.

Removal: The act of removing ACM from the designated areas and disposing of these materials at an acceptable site.
Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

Shower Room: A room between the clean room and the equipment room in the worker decontamination unit, with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The shower room comprises an air lock between contaminated and clean areas.

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

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

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

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

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

1.5 INDUSTRY STANDARDS

Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual sections indicate which codes and standards Contractor must keep available at the project site for reference.

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

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

Where compliance with an industry standard is required, the standard in effect as of the date of the Contract Documents is the governing standard.

At the request of Project Consultant or authority having jurisdiction, a Change Order must be submitted where an applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of the Work affected.

Project Consultant will decide whether to issue a Change Order to proceed with the updated standard.
Where compliance with two or more standards is specified and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent must be referred to Project Consultant for a decision before proceeding.

In every instance, the quantity or quality level shown or specified shall be the minimum to be provided or performed. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Instances of uncertainty must be referred to Project Consultant for decision before proceeding.

Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from the publication source.

Although copies of standards needed for enforcement of requirements may be part of required submittals, Project Consultant reserves the right to require Contractor to submit additional copies as necessary for enforcement of requirements.

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

- **AIHA**
  American Industrial Hygiene Association
  475 Wolf Ledges Parkway
  Akron, OH 44311
  216/762-7294

- **AIA**
  American Institute of Architects
  1735 New York Avenue NW
  Washington, DC 20006
  202/626-7474

- **ANSI**
  American National Standards Institute
  1430 Broadway
  New York, NY 10018
  212/354-3300
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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
<th>Address</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>ASHRAE</td>
<td>American Society for Heating, Refrigeration, and Air Conditioning Engineers</td>
<td>1791 Tullie Circle NE, Atlanta, GA 30329</td>
<td>404/636-8400</td>
</tr>
<tr>
<td>ASME</td>
<td>American Society of Mechanical Engineers</td>
<td>345 East 47th Street, New York, NY 10017</td>
<td>212/705-7722</td>
</tr>
<tr>
<td>ASPE</td>
<td>American Society of Plumbing Engineers</td>
<td>3716 Thousand Oaks Boulevard, Suite 210, Westlake, CA 91362</td>
<td>805/495-7120</td>
</tr>
<tr>
<td>AWCI</td>
<td>Association of the Wall and Ceiling Industries - International</td>
<td>25 K Street NW, Washington, DC 20002</td>
<td>202/783-2924</td>
</tr>
<tr>
<td>CGA</td>
<td>Compressed Gas Association</td>
<td>1235 Jefferson Davis Highway, Arlington, VA 22202</td>
<td>703/979-0900</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
<td>400 Seventh Street SW, Washington, DC 20590</td>
<td>202/426-4000</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
<td>401 M Street SW, Washington, DC 20460</td>
<td>202/382-3949</td>
</tr>
</tbody>
</table>
FS  Federal Specification (General Services Administration)
    Obtain from your Regional GSA Office
    or purchase from GSA Specifications Unit (WFSIS)
    7th and D Streets SW
    Washington, DC  20406
    202/472-2205 or 2140

GA  Gypsum Association
    1603 Orrington Avenue
    Evanston, IL  60201
    312/491-1744

GSA  General Services Administration
    F and 18th Streets NW
    Washington, DC  20405
    202/655-4000

IEEE Institute of Electrical and Electronic Engineers
    345 E. 47th Street
    New York, NY  10017
    212/705-7900

MIL  Military Standardization Documents
    (U.S. Department of Defense)
    Naval Publications and Forms Center
    5801 Tabor Avenue
    Philadelphia, PA  19120

NBS  National Bureau of Standards
    (U.S. Department of Commerce)
    Gaithersburg, MD  20234
    301/921-1000

NEC  National Electrical Code (by NFPA)

NFPA  National Fire Protection Association
      Batterymarch Park
      Quincy, MA  02269
      617/770-3000

NRCA  National Roofing Contractors Association
      6250 River Road
      Rosemont, IL  60018
      312/318-6722

OSHA  Occupational Safety and Health Administration
      (U.S. Department of Labor)
      Government Printing Office
      Washington, DC  20402
      202/783-3238
PS  Product Standard of NBS
(U.S. Department of Commerce)
Government Printing Office
Washington, DC  20402
202/783-3238

RFCI  Resilient Floor Coverings Institute
966 Hungerford Drive, Suite 12-B
Rockville, MD  20805

UL  Underwriters Laboratories
333 Pfingsten Road
Northbrook, IL  60062
312/272-8800

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01091
SECTION 01092 - CODES, REGULATIONS, AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

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

Contractor 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 AND REGULATIONS

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

Contractor shall assume full responsibility and liability for 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. Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable federal, state, and local regulations. Contractor shall hold Owner and Project Consultant harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulation on the part of Contractor, his employees, or his Subcontractors.

1.3.1 Federal Requirements

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

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

* Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules
Title 29, Part 1910, Section 1001 and
Part 1926, Section 1101 of the Code of Federal Regulations
* Respiratory Protection  
Title 29, Part 1910, Section 134 of the  
Code of Federal Regulations  

* Construction Industry  
Title 29, Part 1926, of the  
Code of Federal Regulations  

* Access to Employee Exposure and Medical Records  
Title 29, Part 1910, Section 2 of the  
Code of Federal Regulations  

* Hazard Communication  
Title 29, Part 1910, Section 1200 of the  
Code of Federal Regulations  

* Specifications for Accident Prevention Signs and Tags  
Title 29, Part 1910, Section 145 of the  
Code of Federal Regulations  

DOT U.S. Department of Transportation, including, but not limited to:  

* Hazardous Substances  
Title 29, Part 171 and 172 of the  
Code of Federal Regulations  

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

* National Emission Standards for Hazardous Air Pollutants (NESHAPS)  
National Emission Standard for Asbestos  
Title 40, Part 61, Subpart A,  
and Subpart M (Revised Subpart B) of the  
Code of Federal Regulations  

1.3.2 State Requirements  
State requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:  

TDSHS Texas Department of State Health Services  

* Texas Asbestos Health Protection Act  
Chapter 25 - Texas Administrative Code  
Sections 289.141-295.71  

1.3.3 Local Requirements  
Abide by any and all local requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials.
1.4 STANDARDS

Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents or as if published copies are bound herewith.

Contractor shall assume full responsibility and liability for compliance with all standards pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. Contractor shall hold Owner and Project Consultant harmless for failure to comply with any applicable standard on the part of Contractor, his employees, or his Subcontractors.

Standards that apply to asbestos abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:

ANSI  
American National Standards Institute  
1430 Broadway  
New York, NY  10018  
212/354-3300

* Fundamentals Governing the Design and Operation of Local Exhaust Systems  
Publication Z9.2-79

* Practices for Respiratory Protection Publication Z88.2-80

ASTM  
American Society for Testing and Materials  
1916 Race Street  
Philadelphia, PA  19103  
215/299-5400

* Safety and Health Requirements Relating to Occupational Exposure to Asbestos  
E 849-82

* Specification for Encapsulants for Friable Asbestos-Containing Building Materials  
P-189

1.5 NOTIFICATIONS

Send written notification as required by EPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) and TDSHS, at least 10 working days prior to beginning any work on asbestos-containing materials. Send notification to the following address:

Asbestos Notification Section  
Toxic Substances Control Division  
Texas Department of Health  
Exchange Building, Suite N320  
8407 Wall Street  
Austin, Texas  78754
1.6  LICENSES

Contractor shall maintain current licenses as required by applicable sections of the TDSHS for removal, transportation, disposal, or other regulated activity related to the Work of this Contract.

1.7  POSTING AND FILING OF REGULATIONS

Post all notices required by applicable federal, state, and local regulations in each work area. Maintain two (2) copies of applicable federal, state, and local regulations and standards; one copy of each at each work area and one copy of each on file in Contractor's office.

1.8  SUBMITTALS

Submit all required documents, identified in Section 01301 - Submittals, to Project Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner and Project Consultant.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01092
SECTION 01301 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 specification sections, apply to work of this section.

1.2 SUMMARY

This section specifies administrative and procedural requirements for submittals required for performance of the Work. The submittal checklist at the back of this section identifies submittals that are required before, during, and after the Work specified in these Contract Documents.

1.3 SUBMITTAL PROCEDURES

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.

Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

Coordinate transmittal of different types of submittals that must be reviewed concurrently for coordination of activities.

Project Consultant and Project Consultant reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Submit three copies of each required submittal. Project Consultant will retain two copies and will return one marked with the action taken and corrections or modifications required. Unless noncompliance with Contract Document provisions is noted, the submittal may serve as the final submittal.

1.3.1 Submittal Preparation

Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Project Consultant using Owner's standard submittal form. Submittals received from sources other than Contractor will be returned without action.

1.3.2 Submittal Numbering

Sequentially number the transmittal forms. Resubmittals shall be numbered with the original number and an alphabetic suffix.

1.3.3 Submittal Identification

Identify Project, Contractor, Subcontractor or Supplier, Drawing Sheet and detail number(s), specification number, and section number, as appropriate.
1.3.4 Relevant Information

On the transmittal sheet, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements. Provide space for Owner's review stamp.

1.3.5 Submittal Schedule

Schedule submittals to expedite the Project and deliver to Project Consultant. Project Consultant will forward submittals to Project Consultant for approval as needed.

1.3.6 Submittal Review

Allow two weeks for initial review. Allow additional time if processing of submittal involves coordinating with subsequent submittals. Project Consultant will promptly advise Contractor when processing of a submittal must be delayed for coordination.

No extension of Contract Time will be authorized because of failure to transmit submittals to Project Consultant sufficiently in advance of work to permit processing.

1.3.7 Revised Submittals

Revise and resubmit as required, identifying all variances from the previous submittal. Allow two weeks for reprocessing each submittal.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

Prepare a fully developed, horizontal bar chart type of Contractor's construction schedule. Submit within 30 days of the date established for commencement of work.

Provide a separate time bar for each significant construction activity (e.g., construction of temporary enclosures, removal of ACM, project decontamination, work area clearance, reinsulation, etc.) for each work area. Provide a continuous vertical line to identify the first working day of each week.

Within each time bar, indicate estimated completion percentage in 10% increments. As work progresses, place a contrasting mark in each bar to indicate actual completion.

Following response to the initial submittal, print and distribute copies to Project Consultant, Owner, Subcontractors, and other parties required to comply with scheduled dates. Post copies in Project Consultant's field office, project meeting room, and temporary field office.

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.

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 SUBMITTAL SCHEDULE

At the end of this section is a submittal checklist of the principal submittals required for the Work.

After review and action on Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule of submittals within 30 days of the date required for establishment of Contractor's construction schedule.

Prepare the submittal schedule in chronological order, including submittals required before start of construction. Provide the following information:

* Scheduled date for the first submittal
* Related section number
* Submittal category
* Name of Subcontractors involved
* Description of the part of the Work covered

Following response to the initial submittal, print and distribute copies to Project Consultant, Owner, Subcontractors, and other parties required to comply with submittal dates indicated.

When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

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.

1.6 SHOP DRAWINGS

Shop Drawings shall be submitted prior to abatement activities in each work area. Shop Drawings shall include locations of personnel and equipment decontamination units, HEPA-filtered fan units, emergency exits, and fire extinguishers inside the work area.

Submit Shop Drawings on sheets at least 8 1/2 inches by 11 inches but no larger than 36 inches by 48 inches. Submit one correctable translucent reproducible print and one blue- or black-line print for review by Project Consultant; the reproducible print will be returned.

Retain one Shop Drawing print to be marked up and maintained as a Record Document.

1.7 PRODUCT DATA

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.

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:
* Manufacturer's printed recommendations
* Compliance with recognized trade association standards
* Compliance with recognized testing agency standards
* Application of testing agency labels and seals

Furnish copies of final submittal to Installers, Subcontractors, Suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until a final submittal is in the Installer's possession.

1.8 SAMPLES

Submit full-sized, fully fabricated samples cured and finished as specified and physically identical to the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts, or containers of materials.

Submit samples for review of kind and for a comparison between characteristics of the final submittal and the actual component as delivered and installed.

Field samples specified in individual sections are special types of samples. Field samples are full-sized examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

1.9 SUBMITTAL CHECKLIST

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

Section 01013 - Summary of the Work - Asbestos Abatement

Before Start of Work:

Plan of Action: Submit a detailed plan of the procedures proposed for use in complying with the requirements of these Specifications. Include in the plan the sequencing of asbestos work; the interface of trades involved in the performance of work; methods to be used to assure the safety of building occupants and visitors to the site; a disposal plan, including location of the approved disposal site; and a detailed description of the methods to be employed to control pollution. Expand upon the use of HEPA ventilation, method of removal to prevent visible emissions in the work areas, and packaging of removed asbestos debris. The plan must be approved by Project Consultant prior to commencement of work.

Preconstruction Inspection: Prior to commencement of work, inspect areas in which work will be performed. List damage to structure, surfaces, equipment, or surrounding properties that could be misconstrued as damage resulting from the Work. Submit to Project Consultant prior to starting work.
Periodically During Work:

None

Section 01043 - Project Coordination - Asbestos Abatement

Before Start of Work:

Contingency Plans: Submit a contingency plan for emergencies, including fire, accident, power failure, pressure differential system failure, supplied air system failure, or any other event that may require modification or abridgement of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination or work area isolation. Note that nothing in these Specifications should interfere with safe exiting or provision of adequate medical attention in the event of an emergency.

Telephone Numbers: Submit telephone and pager numbers of Project Superintendent, asbestos supervisor, and foremen. Submit location and telephone number of emergency services designated for this Project.

Notifications: Submit notifications sent to other entities and trades at the work site.

Resumes: Submit resume of Project Superintendent, including experience, training, accreditation, and licensing.

Periodically During Work:

Daily Logs: On a daily basis, submit a daily log of site activities to Project Consultant. Daily logs shall include times of important events, meetings, inspections, visitations, personnel entering and leaving the work area, and removal of waste materials from the work area.

Submit daily logs in triplicate, in chronological order as they pertain to each work area, at the completion of the Work.

Accident Reports: Submit, within eight hours of the incident, reports of accidents resulting in injury requiring any type of medical attention. Reports shall include type of accident, resulting injury, medical attention required, property loss or damage, and entities notified.

Section 01092 - Codes, Regulations, and Standards - Asbestos Abatement

Before Start of Work:

Federal Regulations: Submit the following regulations in triplicate:

* Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules
  Title 29, Part 1910, Section 1001 and Part 1926, Section 58 of the Code of Federal Regulations
* Respiratory Protection
   Title 29, Part 1910, Section 134 of the Code of Federal Regulations

* Hazard Communication
   Title 29, Part 1910, Section 1200 of the Code of Federal Regulations

* Hazardous Substances
   Title 29, Part 171 and 172 of the Code of Federal Regulations

* National Emission Standards for Hazardous Air Pollutants (NESHAPS)
  National Emission Standard for Asbestos
  Title 40, Part 61, Subpart A, and Subpart M (Revised Subpart B) of the Code of Federal Regulations

State Regulations: Submit the following regulations in triplicate:

* Texas Asbestos Health Protection Act
  Chapter 25 - Texas Administrative Code
  Sections 289.141-295.71

Licenses and Certifications: Submit current licenses as required by applicable sections of the TDSHS for removal, transportation, and disposal of asbestos-containing material or any other part of the Work.

Notifications: Submit copy of written notification as required by NESHAPS and the TDSHS. Submit receipt of payment of any notification fees associated with this notification.

Standards: Submit a single copy of standards for use by Project Consultant. 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.

Periodically During Work:

None

Section 01503 - Temporary Facilities - Asbestos Abatement

Before Start of Work:

Scaffolding: Submit list of rolling and fixed scaffolding intended for use on the Project. Submit sufficient detail to indicate compliance with applicable worker safety regulations or other requirements.
Hot Water Heater: Submit manufacturer's name, model number, size in gallons, heating capacity, and power requirements for any hot water heater needed to perform the Work.

Ground Fault Circuit Interrupters (GFCI): Submit product data.

Lamps and Light Fixtures: Submit product data.

Temporary Heating/Cooling Units: Submit product data.

First Aid Supplies: Submit product data.

Fire Extinguishers: Submit product data.

Periodically During Work:
None

Section 01513 - Temporary Pressure Differential and Air Circulating System

Before Start of Work:

Pressure Differential System Design: Identify the pressure differential system components on the Shop Drawing for each work area. The system design shall include the required HEPA-filtered fan units and the calculations necessary to determine the number of machines, description of projected air flow within the work area, anticipated pressure differential across work area enclosures, methods of testing for correct air flow and pressure differentials, and location of the machines in the work area.

HEPA-Filtered Fan Units: Submit product data.

Auxiliary Generator: Submit product data.

Power Switch: Submit product data.

Auxiliary Power System: Identify auxiliary power system components on the Shop Drawing.

Periodically During Work:

Pressure Differential
Monitoring Results: Submit printout of pressure differential monitoring equipment to Project Consultant on a daily basis. Mark the printout with date and start of time for the day. Use printout paper that indicates elapsed time in intervals no greater than hours. Indicate, on each day's 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 and attach to 8 1/2-inch by 11-inch paper. Label with project name, Contractor's name, and date.

Section 01526 - Temporary Enclosures

Before Start of Work:

Spray Cement: Submit product data and MSDS.

Sheet Plastic: Submit product data, including test reports on NFPA 701 test.

Signs: Submit sample.

Periodically During Work:

None

Section 01560 - Worker Protection - Asbestos Abatement

Before Start of Work:

Accreditation: Submit applicable AHERA accreditation for each worker performing work on this Project.

State License: Submit TDSHS license (registration) for each worker performing work on this Project.

Certificate of Worker's Acknowledgement: Submit Certificate of Worker's Acknowledgement for each worker performing work on this Project.

Training Certifications: Submit copies of worker training courses for each worker performing work on this Project.

Physician's Statement: Submit physician's statement from medical examination conducted within last 12 months for each worker. Report shall be in compliance with OSHA medical surveillance requirements for each worker who is to enter the work area.

Physician's statement shall verify that the worker is able to wear and use the type of respiratory protection proposed for the Project and is able to
work safely in an environment capable of producing heat stress in the worker.

Periodically During Work:

Personnel Air Sample Analysis
Results: Submit results of personnel air sampling analysis on a daily basis and within 24 hours from the time the samples were collected. Samples shall be collected by a TDSHS-licensed air monitoring technician and analyzed by a TDSHS-licensed asbestos laboratory licensed to perform phase contrast microscopy (PCM) analysis.

Section 01562 - Respiratory Protection

Before Start of Work:

Respirators: Submit product data and NIOSH and MSHA certifications for all respirators utilized during the Project. If Type "C" respirators are utilized, submit system diagram and operating instructions for the system.


Fit Test Results: Submit initial fitting of respiratory protection during a respiratory course of training for each worker. Fit tests shall be performed on respirators actually used by the worker being fit-tested.

Historical Monitoring Results: For purposes of respiratory downgrade, submit personnel and inside containment monitoring results from three (3) previous projects performed by Contractor on similar work. Results shall be from an independent air monitoring firm to substantiate selection of respiratory protection proposed.

Periodically During Work:

Fit Test Results: Submit fit test results for new workers prior to allowing the worker to enter into a work area. On a weekly basis, submit results of fit testing for each worker.

Section 01563 - Decontamination Units

Before Start of Work:
Decontamination Units: Identify locations in Shop Drawings.
Filters: Identify locations in Shop Drawings.
Wash Station
Shower Stall: Identify locations in Shop Drawings.
Sump Pump: Submit product data.

Periodically During Work:
None

Section 01601 - Materials and Equipment - Asbestos Abatement

Before Start of Work:
Product List
Schedule: Submit a schedule showing specified products in a tabular form acceptable to Project Consultant. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

Periodically During Work:
Product List
Schedule as Needed: Submit updated schedule showing specified products in a tabular form acceptable to Project Consultant. Schedule shall be updated as needed throughout the Project.

Section 01632 - Product Substitutions - Asbestos Abatement

Before Start of Work:
Refer to section

Periodically During Work:
Refer to section

Section 01701 - Project Closeout - Asbestos Abatement

Before Start of Work:
None
Periodically During Work:
Refer to section

Section 01711 - Project Decontamination

Before Start of Work:
None

Periodically During Work:
None

Section 02081 - Removal of Asbestos-Containing Material and Debris

Before Start of Work:
Shop Drawings: Submit Shop Drawings as specified in Article 1.6 of this section.
Product Data: Submit product data as specified in Article 1.7 of this section.

Periodically During Work:
None

Section 02084 - Disposal of Asbestos-Containing Waste Material

Before Start of Work:
Waste Hauler State License: Submit a copy of the TDSHS license for the asbestos waste transporter.
Landfill Information: Submit the name and address of the approved landfill where asbestos-containing waste materials are buried. Include contact person and telephone number.
Waste Manifest: Submit the waste manifest form proposed for use to document proper disposal of asbestos-containing waste materials.
Disposal Bag: Submit samples of disposal bags proposed for this Project.
Sample Labels: Submit samples of proper labels to be placed on each bag of asbestos-containing waste materials.

Periodically During Work:
Waste Manifests: Submit copies of all manifests of asbestos-containing waste materials transported and disposed of during the Project.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01301
SECTION 01410 - AIR MONITORING - TEST LABORATORY SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirements, apply to work of this section.

1.2 DESCRIPTION OF WORK

This section describes work performed by an independent contractor retained by Owner. This work is not in the contract sum.

This section describes air monitoring performed by an independent contractor retained by Owner to verify that the building beyond the work area and the outside environment remain uncontaminated during the Work. This section also sets forth airborne fiber levels both inside and outside the work area as action levels and describes the action required of Contractor if an action level is met or exceeded. Air monitoring required by OSHA is the Work of Contractor and is not covered in this section.

1.3 AIR MONITORING

Owner will be conducting air monitoring throughout the course of the Project.

1.3.1 Work Area Isolation

The purpose of Owner's air monitoring is to detect defects in the work area isolation, such as failure of filtration or a rupture in the differential pressure system, indicated by contamination of the building outside the work area or contamination of air outside the building (outside environment) with airborne asbestos fibers.

Should any of the above problems occur, immediately cease asbestos abatement activities until the defect is corrected. Do not recommence work until authorized to do so by Project Consultant.

1.3.2 Work Area Monitoring

Owner will monitor airborne fiber counts in the work area. The purpose of this air monitoring will be to detect airborne asbestos concentrations that may challenge the effectiveness of the work area isolation procedures in protecting the rest of the building or outside the building from contamination by airborne fibers.

1.3.3 Work Area Clearance

To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, Owner will sample and analyze air per Section 01714 - Work Area Clearance.
1.4 STOP ACTION LEVELS

1.4.1 Inside Work Area

Maintain an average airborne count in the work area of less than 0.5 fiber 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 eight-hour period exceeds 0.5 fiber per cubic centimeter, stop all work, leave the pressure differential system in operation, and notify Project Consultant. After correcting the cause of the high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Project Consultant.

1.4.2 Outside Work Area

If any air sample taken outside of the work area exceeds 0.01 f/cc or the baseline concentration, whichever is higher, immediately stop all work except corrective action and determine and correct the source of the high reading.

If the high reading was the result of a failure or breach of work area isolation measures, initiate the following actions:

* Immediately erect new critical barriers, as set forth in Section 01526 - Temporary Enclosures, to isolate the affected area from the rest of the building. Erect critical barriers at the next existing structural isolation of the involved space (e.g., wall, ceiling, floor).

* Decontaminate the affected area in accordance with Section 01712 - Cleaning and Decontamination Procedures.

* Require that respiratory protection, as set forth in Section 01562 - Respiratory Protection, be worn in the affected area until the area is cleared for reoccupancy in accordance with Section 01714 - Work Area Clearance.

* Leave the critical barriers in place until completion of work and ensure that the operation of the pressure differential system in the work area results in a flow of air from the rest of the building into the affected area.

* 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 the entry point to the affected area.

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

1.5 ANALYTICAL METHODS

The following methods will be employed by Owner in analyzing filters used to collect air samples. Sampling rates may vary from printed standards to allow for high-volume sampling.
Phase contrast microscopy (PCM) will be performed using the NIOSH 7400 Method. This analysis will be conducted at the job site, or the samples will be properly packaged and sent to an outside laboratory for analysis. In either case, sample results shall be available at the job site within 24 hours.

Samples will be collected on 25mm nonconductive cassettes with 50mm extension cowling.

Sample cassettes shall contain mixed cellulose ester (MCE) filters of 0.8-micrometer (µm) porosity.

1.6 NUMBER OF SAMPLES AND VOLUMES

The number and volume of air samples collected may vary depending upon the location and type of work performed.

1.6.1 Baseline Samples

Baseline ambient air samples will be collected 24 hours prior to the erection of the abatement containment. Baseline samples will consist of PCM samples. PCM samples will be utilized to determine the outside work area action limits. These samples will be analyzed under the conditions and terms set forth in "Fibers Counted" and "Effect on Contract Sum."

1.6.2 Daily

From start of work of Section 01526 - Temporary Enclosures through the work of Section 01711 - Project Decontamination, Owner will be collecting air monitoring samples on a daily basis. These samples will be utilized to detect any breach of containment.

1.7 LABORATORY TESTING

The services of a testing laboratory will be retained by Owner to perform laboratory analyses of the air samples. A microscope and a licensed air monitoring technician will be set up at the job site, or samples will be sent on a daily basis to a licensed asbestos laboratory, so that verbal reports on air samples can be obtained within 24 hours.

Contractor will have access to all air monitoring tests and results upon written request presented to Owner or Project Consultant.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ADDITIONAL TESTING

Contractor may conduct his own area 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 Owner.
3.2 PERSONAL MONITORING

Owner will not be performing air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose. Contractor shall include to cost of OSHA monitoring in its Proposal.

END OF SECTION 01410
SECTION 01503 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS

Provide a temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the Work. This section addresses temporary utilities, scaffolding, and controls.

Maintain the work area in a clean and orderly condition as determined by Project Consultant.

1.3 SUBMITTALS

Submit all required documents, identified in Section 01301 - Submittals, to Project Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner's and Project Consultant.

PART 2 - PRODUCTS

2.1 SCAFFOLDING

Provide all scaffolding, ladders, platforms, and staging as necessary to accomplish the Work of this Contract. Scaffolding may be of suspension or standing design, of metal, coupler, tubular welded frame, pole or outrigger, or cantilever type. The type, erection, and use of all scaffolding shall comply with all applicable OSHA provisions.

Provide a nonskid surface on all scaffold and platform surfaces subject to foot traffic.

2.2 WATER SERVICE

2.2.1 Temporary Water Service Connection

All connections to Owner's water system shall include backflow protection. Valves shall be temperature- and pressure-rated for operation at 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 exiting sink or grade where water will not damage existing finishes or equipment.

2.2.2 Water Hoses

Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to 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, shutoff nozzles, and equipment.

2.2.3 Hot Water Heater

Provide a UL-rated 40-gallon electric hot water heater to supply hot water for the decontamination unit shower. Activate from a 30-amp circuit breaker located within the decontamination unit subpanel. Provide with a relief valve compatible with water heater operation; pipe the relief valve down to a drip pan on the floor with Type L copper tubing. Drip pans shall be 12 inches by 12 inches by 6 inches deep, made of 19-gauge galvanized steel and having handles. A 3-quart kitchen saucepan may be substituted for this purpose. The drip pan shall be securely fastened to the hot water heater with bailing wire or a similar material. Wiring of the hot water heater shall be in compliance with NEMA, NECA, and UL standards.

2.2.4 Hot Water

Hot water may be secured from the building hot water system, if authorized in writing by Project Consultant, provided backflow protection is installed at the point of connection as described in this section under 2.2.1 Temporary Water Service Connection.

2.3 ELECTRICAL SERVICE

Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

2.3.1 Electrical Connections

Connect to existing power service. Assure that power consumption does not disrupt Owner's need for continuous service. Exercise measures to conserve energy. Owner will pay the cost for all energy used.

2.3.2 Temporary Power

Provide service to the decontamination unit subpanel with a minimum 60-amp, 2-pole circuit breaker or fused disconnect connected to the building's main distribution panel. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the Work.

2.3.3 Voltage Differences

Provide warning signs identifying power outlets that 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. Provide dry transformers where required to furnish voltages necessary for work operations.

2.3.4 Ground Fault Protection

Equip all circuits entering the work area for any purpose with ground fault circuit interrupters (GFCIs). Locate GFCIs outside the work area so that all circuits are protected before entry into the work area. Provide circuit breaker type GFCIs equipped with test button and reset switch for all circuits to be used for any purpose in the work area, decontamination units, or exterior, or as
otherwise required by the national electrical code, OSHA, or other authority. Locate in the panel outside of the work area.

2.3.5 Electrical Power Cords

Use only grounded extension cords, of "hard-service" durability where cords are exposed to abrasion and traffic. Use single lengths where possible, or use waterproof connectors to couple separate lengths of cord if single lengths will not reach areas of work.

2.3.6 Lamps and Light Fixtures

Provide general-service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination of work of 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.

2.3.7 Electrical Service for Air Monitoring Contractor

Contractor shall provide electrical service as necessary at all times and in all work areas as required to meet the needs of the Air Monitoring Contractor.

2.4 HEATING

Provide temporary heating units that have been tested and labeled by UL or another recognized trade association related to the fuel being consumed. Use steam or hot water radiant heat where available; where steam or hot water radiant heat is not available, use electric-resistant fin radiation supplied from a branch circuit with a GFCI.

2.5 FIRST AID

Comply with governing regulations and recognized recommendations within the construction industry.

2.6 FIRE extinguisher

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

PART 3 - EXECUTION

Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire Project adequately and result in minimum interference with the performance of the Work. Require that tradesmen accomplishing the Work be licensed as required by local authority for work performed. Relocate, modify, and extend services and facilities as required during the course of work so as to accommodate the entire Work of the Project.
3.1 SCAFFOLDING

During the erection and/or moving of scaffolding, exercise care to avoid damaging the polyethylene floor covering. Equip rings of all metal ladders with an abrasive, nonslip surface. Provide a nonskid surface on all scaffolding for foot traffic. Clean, as necessary, all debris from nonslip surfaces.

3.2 WATER SERVICE

Water connection (without charge) to Owner's existing potable water system is limited to one 3/4-inch pipe-size connection and a maximum flow of 10 gallons per minute (gpm) each to the hot and cold water supply. Install using vacuum breakers or other backflow preventer as required by local authority. Supply hot water at a minimum temperature of 100° F. Supply hot and cold water to the decontamination unit in accordance with Section 01516. In addition, supply water for wetting of asbestos-containing material inside the work area.

Maintain hose connections and outlet valves in leakproof condition. Where finish work below an outlet might be damaged by spills or leaks, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

3.3 ELECTRICAL SERVICE

Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.

3.3.1 Lockout

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 the temporary electrical panel described below.

Lock out power to the work area by switching off all breakers serving power or lighting circuits in the work area. Label breakers with tape over each breaker bearing the notation:

"DANGER: CIRCUIT BEING WORKED ON"

Lock the panel and have all keys under the control of Contractor's Superintendent or Project Consultant.

Lock out power to circuits running through the work area wherever possible by switching off all breakers serving these circuits. Label breakers with tape over each breaker bearing the notation:

"DANGER: CIRCUIT BEING WORKED ON"

Sign and date the danger tag. Lock the panel and supply keys to Contractor, Owner, and Project Consultant. If circuits cannot be shut down for any reason, label at intervals 4 feet on center with tags reading:
"DANGER: LIVE ELECTRIC CIRCUIT
ELECTROCUTION HAZARD"

3.3.2 Temporary Electrical Panel

Provide a temporary electrical panel sized and equipped to accommodate all electrical equipment and lighting required by the Work. Connect the temporary panel to the building's existing electrical system. Protect with a circuit breaker or fused disconnect. Locate the temporary panel as directed by Owner or Project Consultant.

3.3.3 Power Distribution System

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

3.3.4 Circuit Protection

Protect each circuit with a GFCI of proper size located in the temporary panel. Do not use outlet-type GFCI devices.

3.3.5 Temporary Wiring

In the work area use Type UF nonmetallic 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.

3.3.6 Number of Branch Circuits

Provide branch circuits as required by the Work. All branch circuits are to originate at the temporary electrical panel. At minimum, provide the following:

- One circuit for each HEPA-filtered fan unit

- For power tools and task lighting, one temporary 4-gang outlet in the work area for each 2,500 square feet in the equipment room and a separate 110-120 volt, 20-amp circuit for each 4-gang outlet (4 outlets per circuit)

- 110-120 volt, 20-amp branch circuits with 4-gang outlet for Owner's exclusive use while conducting air sampling during the Work as follows:
  - One in each work area
  - One at the clean side of each decontamination unit
  - One at each exhaust location for HEPA-filtered fan units

- 110-120 volt, 20-amp branch circuits with 4-gang outlet for Owner's exclusive use for conducting final air sampling, as set forth in Section 01714 - Work Area Clearance
3.3.7 Work Platforms

Contractor shall be responsible for providing electrical power to all work platforms.

3.4 TEMPORARY LIGHTING

3.4.1 Lockout

Lock out all existing power to lighting circuits in the 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 the temporary electrical panel described above.

3.4.2 Light Level

Provide the following, or equivalent, where natural lighting or the existing building lighting does not meet the required light level:

* One 200-watt incandescent lamp per 1,000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature

* In corridors and similar traffic areas, one 100-watt incandescent lamp every 50 feet

* In stairways and at ladder runs, 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.

Provide lighting in areas where work is being performed as required to supply a 100-footcandle minimum light level.

Provide lighting in any area being subjected to a visual inspection as required to supply a 100-footcandle minimum light level.

Provide lighting in the decontamination unit as required to supply a 50-footcandle minimum light level.

3.4.3 Number of Lighting Circuits

Provide lighting circuits as required by the Work. All lighting circuits are to originate at the temporary electrical panel.

3.4.4 Circuit Protection

Protect each circuit with a GFCI of proper size located in the temporary panel.
3.5  SANITARY FACILITIES

Use of Owner's existing toilet facilities will not be permitted without written authorization from Owner. If authorization is granted, designated facilities may be utilized so long as these facilities are properly cleaned and maintained in a condition acceptable to Owner. At substantial completion, return these facilities to the condition they were in at the time of initial use. Written permission from Owner must be obtained, and all provisions of these Specifications must be met.

3.6  FIRE EXTINGUISHER

Comply with the applicable recommendations of NFPA Standard 10, "Standard for Portable Fire Extinguishers." Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each work area in the equipment room and one outside the work area in the clean room.

END OF SECTION 01503
SECTION 01513 - TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 specification sections, apply to work of this section.

1.2 MONITORING

Continuously monitor and record the pressure differential between the work area and the building outside the work area with a monitoring device incorporating a continuous recorder (e.g., a strip chart). The meter shall be equipped with a warning buzzer that will sound if the pressure differential drops below 0.02 inch of water.

1.3 SUBMITTALS

Prior to the start of work in each work area, submit a design for the pressure differential system to Project Consultant for review and approval. Include in the submittal, at a minimum:

* Number of HEPA-filtered fan units required and the calculations necessary to determine the number of machines
* Description of projected air flow within the work area and methods required to provide adequate air flow in all portions of the work area
* Anticipated pressure differential across work area enclosures
* Description of methods of testing for correct air flow and pressure differentials
* Manufacturer's product data on the HEPA-filtered fan units to be used
* Location of the machines in the work area
* Method of supplying adequate power to the machines and designation of building electrical panel(s) that will be supplying the power
* Description of work practices to ensure that airborne fibers travel away from workers
* Manufacturer's product data on equipment used to monitor pressure differential between inside and outside the work area

Submit all required documents, identified in Section 01301 - Submittals, to Project Consultant for review prior to the start of work in any given work area. Do not begin work until these submittals are returned, approved by Owner and Project Consultant.
PART 2 - PRODUCTS

2.1 HEPA-FILTERED FAN UNITS

Supply the required number of HEPA-filtered fan units to the site in accordance with these Specifications. Use units that meet the following requirements.

2.1.1 Cabinets

HEPA fan unit cabinets shall be constructed of durable materials able to withstand damage from rough handling and transportation. The width of the cabinet should be less than 30 inches to fit through standard-size doorways. Cabinets shall be factory-sealed to prevent asbestos-containing dust from being released during use or transport, shall be arranged to provide access to and replacement of all air filters from intake end, and shall be mounted on casters or wheels.

2.1.2 Fans

The capacity of HEPA-filtered fans shall be rated according to usable air-moving capacity under actual operating conditions.

2.1.3 HEPA Filters

HEPA-filtered fan units shall have the filter media (folded into closely pleated panels) completely sealed on all edges, with a structurally rigid frame. A continuous rubber gasket shall be located between the filter and the filter housing, forming a tight seal.

HEPA filters shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3 µm dioctylphthalate (DOP) particles and tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. HEPA filters shall bear a UL586 label to indicate ability to perform under specified conditions.

HEPA filters shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

2.1.4 Prefilters

Prefilters that protect the final filter by removing the larger particles are required in order to prolong the operating life of the HEPA filter. Units shall be provided with prefilters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps. The following prefilters shall be provided:

* First-stage prefilter of a low-efficiency type (i.e., for particles 100 µm and larger)

* Second-stage (or intermediate) filter of medium efficiency (i.e., effective for particles down to 5 µm)
2.1.5 Instrumentation

Fan units shall be equipped with a magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed and an elapsed time meter to show the total accumulated hours of operation.

2.1.6 Safety and Warning Devices

Units shall be equipped with the following safety and warning devices:

* Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter

* Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge

* Warning lights to indicate:
  - Green light: normal operation
  - Yellow light: extreme pressure increase across the filters (e.g., filter overloading)
  - Red light: extreme pressure decrease (e.g., rupture in the HEPA filter or obstructed discharge)

* Audible alarm if unit shuts down due to operation of safety systems

2.1.7 Electrical Components

Unit electrical components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriters 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.

PART 3 - EXECUTION

3.1 PRESSURE DIFFERENTIAL ISOLATION

Isolate the work area from all adjacent areas or systems of the building by means of a pressure differential that will cause a movement of air from outside to inside at any breach in the physical isolation.

Continuously maintain the work area at an air pressure 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 0.02 inch of water.

Use smoke tubes, or equivalent, to demonstrate a definite motion of air across all areas in which work is to be performed.
3.1.1 Number of Fan Units

Achieve 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 makeup air or leaks into the work area.

Provide a fully operational air circulation system supplying a minimum of four (4) air changes per hour. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine the total air circulation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by the air change rate and multiplying by 60:

\[
\text{Air circulation required in cubic feet of air per minute (CFM) =} \\
\frac{\text{Volume of work area (cu. ft.)} \times \text{Number of air changes per hour}}{60 \text{ (minutes per hour)}}
\]

Divide the air circulation requirement (CFM) above by the capacity of the HEPA-filtered fan unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential that causes loaded filter warning light to come on) under the machine's labeled operating characteristics.

\[
\text{Number of units needed =} \\
\frac{\text{Air circulation requirement (CFM)}}{\text{Capacity of unit with loaded filters (CFM)}}
\]

Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

3.1.2 Venting of Fan Units

Vent HEPA-filtered fan units to the outside of the building unless authorized otherwise in writing by Project Consultant. Contractor shall be responsible for removal of perimeter windows for exhaust outlets of fan units.

3.1.3 Fan Unit Ductwork

Mount fan units to exhaust directly through disposable ductwork. Use only new ductwork in each work area. Use ductwork and fittings of same diameter or larger than the discharge connection on the fan unit. Use inflatable, disposable plastic ductwork in lengths not greater than 100 feet. Use spiral wire-reinforced flex duct in lengths not greater than 50 feet. Arrange exhaust as required to inflate the duct to a rigidity sufficient to prevent flapping.

3.2 EXHAUST SYSTEM

Pressure differential isolation and air circulation in the work area are to be achieved by an exhaust system as described below. Exhaust all units from the work area to meet air circulation requirements of this section.
3.2.1 Location of HEPA-Filtered Fan Units

Locate fan units 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 units at a maximum distance from the worker access opening or other makeup air sources. Identify the fan unit locations on drawings to be submitted to Project Consultant prior to the start of the Work.

3.2.2 Exhaust

Place the end of the fan unit, an intake duct, or its exhaust duct through an opening in the plastic barrier or wall covering. Seal plastic around the unit or duct with tape. Vent to the outside of the building, unless authorized otherwise in writing by Project Consultant.

3.2.3 Decontamination Units

Arrange the work area and decontamination units so that most of the makeup air comes through the decontamination units. Use only the personnel or the equipment decontamination unit at any one time and seal the other so that makeup air passes through the unit in use.

3.2.4 Supplemental Makeup Air Inlets

Where required, provide for proper air flow through the work area in a location approved by Project Consultant 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 the flaps and around the opening with spray adhesive so that, if flaps close, meeting surfaces are both covered with adhesive. Use adhesive that forms contact bond when dry.

3.3 AIR CIRCULATION IN DECONTAMINATION UNITS

Continuously maintain the pressure differential required for the work area in the personnel decontamination unit, across the shower room with the equipment room at a lower pressure than the clean room.

Continuously maintain the pressure differential required for the work area in the equipment decontamination unit, across the holding room with the wash room at a lower pressure than the clean room.

3.3.1 Air Circulation

Continuously maintain air circulation in the decontamination units at the same level required for the work area. 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.
3.4 USE OF PRESSURE DIFFERENTIAL SYSTEM

Each unit shall be serviced by a dedicated minimum 115-volt, 20-amp circuit with ground fault circuit interrupter (GFCI) supplied from the temporary power supply installed under requirements of Section 01503 - Temporary Facilities - Asbestos Abatement. Do not use existing branch circuits to power fan units.

3.4.1 Testing the System

Test the pressure differential system before any asbestos-containing material is wetted or removed. After the work area has been prepared, the decontamination facility set up, and the fan units installed, start the units (one at a time). Demonstrate operation and testing of the pressure differential system to Project Consultant.

Demonstrate the condition of equipment for each HEPA-filtered fan unit and the pressure differential monitoring equipment, including:

* Condition of seals
* Operation of all lights
* Operation of automatic shutdown if exhaust is blocked
* Operation of alarms
* Operation of magnehelic gauge
* Operation and calibration of pressure monitoring equipment

A demonstration of proper operation of the pressure differential system will include, but not be limited to:

* Light movement of plastic barriers and sheeting in toward work area
* Light movement of decontamination unit curtains in toward work area
* Noticeable movement of air through the decontamination unit

Use a smoke tube to demonstrate air movement from the clean room through the shower room to the equipment room. Use smoke tubes to demonstrate a definite motion of air across all areas in which work is to be performed.

3.5 USE OF SYSTEM DURING ABATEMENT OPERATIONS

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.

Do not shut down the air pressure differential system during encapsulating procedures, unless authorized in writing by Project Consultant to do so. Supply sufficient prefilters to allow frequent changes.

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.

Section 01513-6
At completion of abatement work, allow fan units to run as specified under Section 01711 - Project Decontamination, 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.

3.6 DISMANTLING THE SYSTEM

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 removing fan units from the work area, remove and properly dispose of the prefilters, decontaminate the exterior of the machines, and seal the intake to the machines with 6-mil polyethylene to prevent environmental contamination from the filters.

END OF SECTION 01513
SECTION 01526 - TEMPORARY ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings, General Conditions of the Contract Documents and other Division 1 General Requirements sections apply to work of this section.

1.2 DESCRIPTION OF WORK

The Work consists of constructing temporary enclosures in the work areas included in these Work Procedures.

PART 2 - PRODUCTS

2.1 SHEET PLASTIC

2.1.1 Polyethylene Sheet

Provide 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, 4.0 or 6.0 mil thick as indicated, frosted or black as indicated.

2.2 MISCELLANEOUS MATERIALS

2.2.1 Duct Tape

Provide duct tape in 2-inch or 3-inch widths as indicated, with an adhesive formulated to stick aggressively to polyethylene sheet.

2.2.2 Spray Adhesive

Provide aerosol cans of spray adhesive that is specifically formulated to stick to polyethylene sheet.

PART 3 - EXECUTION

Carry out work of this section sequentially. Complete each activity before proceeding to the next.

The work area is the location where asbestos abatement work occurs. It 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 course of work and must be isolated from the rest of the building and decontaminated at the completion of the asbestos control work.

3.1 GENERAL

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 become contaminated with asbestos-containing dust or debris, clean those areas in accordance with the procedures indicated in Section 01711 - Project Decontamination. Perform all such required cleaning or decontamination at no additional cost to Owner.

Place all tools and staging necessary for the Work in the area to be isolated prior to completion of work area isolation.

Remove all removable furniture that has been designated uncontaminated by the Work Procedures or Project Consultant. Also remove uncontaminated equipment and/or supplies from the work area before commencing work, or completely cover with two (2) layers of polyethylene sheet at least 6 mil in thickness, securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

Disable any ventilating system or other system bringing air into or out of the work area. Disable system by disconnecting wires, removing circuit breakers, locking lockable switches, or other positive means that will prevent an accidental premature restarting of equipment.

Lock out power to the work area by switching off all breakers serving power or lighting circuits in the work area. Label breakers with tape over breaker bearing the notation:

"DANGER: CIRCUIT BEING WORKED ON"

Lock out power to circuits running through the work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker bearing notation:

"DANGER: CIRCUIT BEING WORKED ON"

Lock the panel and have all keys under the control of Contractor's Superintendent or Project Consultant. If for any reason circuits cannot be shut down, label at intervals 4 feet on center with tags reading:

"DANGER: LIVE ELECTRIC CIRCUIT
ELECTROCUTION HAZARD"

Label in a similar manner any circuits that may be in obscure locations but which may be affected by the Work.

3.2 INSPECTION WINDOWS

Install inspection windows in locations as directed by Project Consultant. Each inspection window is to have a 24-inch by 24-inch viewing area fabricated from 1/4-inch acrylic or polycarbonate sheet. Install the window with its top at 6 feet 6 inches above floor height in a manner that provides unobstructed vision from the outside to the inside of the work area. Protect the window from damage from scratching, dirt, or any coatings used during the Work. Enough windows are to be installed to provide observation points for all portions of the work area that can be made visible from adjacent areas. Inspection windows that open into an uncontrolled area are to be covered with a removable plywood hatch secured by lock and key, and keys for all such locks are to be provided to Project Consultant.
3.3 EMERGENCY EXITS

Adapt each existing door to the work area so that it is secure from outside the work area but permits exiting from the work area.

Mark the outline of each door on the primary and critical barriers with luminescent paint at least 1 inch wide. Hang a razor knife on a string beside the outline. Arrange primary and critical barriers so that they can be easily cut with one pass of the razor knife. Paint the words: "EMERGENCY EXIT"

inside the outline with luminescent paint in letters at least 1 foot high and 2 inches thick.

3.4 CONTROL OF ACCESS

Isolate the work area to prevent building occupants from entering the work area or surrounding controlled areas. Lock all doors into the work area. Cover any signs that direct emergency exiting, either outside or inside the work area, to the locked doors. Do not obstruct doors required for emergency exits from the work area or from the building.

3.5 VISUAL BARRIER

Unless otherwise authorized, 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 thick so that work activity is not visible to building occupants.

Provide warning signs at each locked door leading to the work area reading as follows:

<table>
<thead>
<tr>
<th>Legend</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEEP OUT</td>
<td>3-inch Sans Serif Gothic or Block</td>
</tr>
<tr>
<td>CONSTRUCTION</td>
<td>1-inch Sans Serif Gothic or Block</td>
</tr>
<tr>
<td>WORK AREA</td>
<td>1-inch Sans Serif Gothic or Block</td>
</tr>
<tr>
<td>PROTECTIVE CLOTHING REQUIRED</td>
<td>14 Point Gothic</td>
</tr>
<tr>
<td>BEYOND THIS POINT</td>
<td></td>
</tr>
</tbody>
</table>

Immediately inside the door and outside the critical barriers post a manufactured caution sign, approximately 20 inches by 14 inches, displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

DANGER

ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

Provide spacing between lines at least equal to the height of the preceding upper line.
3.6 CRITICAL BARRIERS

Completely separate the work area from other portions of the building and the outside environment by closing all openings with sheet plastic barriers at least 6 mil in thickness or by sealing cracks with spray-foam, poly sheeting, and/or duct tape.

Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convecto casings, spandrel panels, and speakers, and other openings into the work area polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work, including project decontamination, is completed. Take care in sealing off lighting fixtures to avoid melting or burning the sheeting.

Provide sheet plastic barriers at least 6 mil in thickness as required to completely seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement. Erect the entire assembly so that it hangs vertically without a "shelf" upon which debris could collect.

Provide a pressure differential system per Section 01513 - Temporary Pressure Differential and Air Circulation System.

3.7 PREPARATION OF AREA

Clean all contaminated furniture, equipment, and/or supplies, prior to moving or covering, with a HEPA-filtered vacuum cleaner or by wet cleaning. All equipment or furniture is to be deemed contaminated unless specifically declared uncontaminated in writing by Project Consultant. Clean all surfaces in the work area with a HEPA-filtered vacuum or by wet-wiping prior to installing the primary barrier. All walls remaining in the work area will be HEPA vacuumed and prepped as critical barriers.

3.8 PRIMARY BARRIER

Cover walls and other building surfaces with a primary barrier, as described below to protect these surfaces from water damage and high humidity or from contamination by asbestos-containing debris, slurry, or high airborne fiber levels.

* Cover the floor of the work area with two individual layers of clear polyethylene sheeting, each at least 6-mil in thickness, lapped up on the walls at least 12 inches. Plastic shall be sized to minimize seams.

- Form a sharp right angle bend at the juncture of floor and wall so that there is no area of the sheeting that would cause the wall attachment to be pulled loose.

- Both spray-glue and tape with duct tape all seams in the floor covering. Locate seams in the poly sheeting at least 6 feet from, or at right angles to, the seams in the underlaying layers. Install the sheeting so that each layer can be removed independently of the underlaying layers.

* Cover all walls in the work (including the sheet plastic barriers used as the critical barrier) with two layers of polyethylene sheeting, at least 4-mil in thickness, sealed with duct tape or spray-glue in the same manner as the critical barriers.
* Overlap the wall sheeting and floor sheeting by at least 12 inches beyond the wall/floor joint to provide a better seal against water damage and to allow for negative pressure. Tape all joints, including the joint with the floor covering, with duct tape or as otherwise indicated on the Contract Documents or in writing by Consultant’s Project Manager. Wall sheeting shall be secured adequately to prevent it from falling away from the walls when negative pressure ventilation is utilized.

- Six-foot, 6-mil. splashguards may be used in lieu of two layers of wall sheeting for the work areas consisting of only floor tile and/or floor tile mastic removal.

All plastic sheeting will be certified by the Underwriters Laboratory (UL) as being fire retardant. Where feasible, when containment walls which exceed 260 linear feet must be constructed, a viewing window will be included in the wall for each 260 linear feet or fraction of that distance which will permit the viewing of at least 51% of the abatement work area. The window shall be constructed of Plexiglas, which measures approximately 18 inches by 18 inches. The bottom of the window will be at a reasonable viewing height from the outside floor.

3.9 SECONDARY BARRIER

Use of a secondary layer of plastic as a drop cloth to protect the primary layers from debris generated by the asbestos abatement work is specified in the appropriate work sections. The secondary barrier shall cover the extent of Work being performed and shall be cleaned or bagged as asbestos contaminated at the end of each shift.

END OF SECTION 01526
SECTION 01530 - MINI-CONTAINMENT/GLOVEBAG PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract and other Division 1 Specification Sections apply to work of this section. Required Supervision and OSHA Competent Person as specified in Section 01043. Worker Protection as specified in Section No. 01560. Respirator Protection as specified in Section No. 01562. Wet Decontamination facilities as specified in Section No. 01563.

1.2 DESCRIPTION OF THE WORK

The procedures outlined in this section are to be followed when the Work to be performed does not require the detailed Temporary Enclosure system specified in Section No. 01526.

Typically, the procedures specified in this section shall be followed during the removal of thermal system insulation from pipe. The methods specified in this section shall only be approved when the option is presentation in Section No. 02081, or otherwise authorized by Project Consultant.

Glovebag operations shall only be performed while inside a negative pressure Mini-Containment, unless otherwise authorized by Project Consultant. If construction of a Mini-Containment is not feasible or causes unsafe working conditions, a negative pressure glovebag or glovebox shall be utilized.

PART 2 - PRODUCTS

2.1 CONTAINMENT MATERIALS

Provide polyethylene sheeting, reinforced polyethylene sheeting, duct tape, and spray cement as specified herein.

2.2 WETTING MATERIALS

For wetting prior to disturbance of asbestos-containing materials use either amended water or a removal encapsulant:

2.2.1 Amended Water

Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the asbestos-containing material 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.

2.2.2 Removal Encapsulant

Provide a penetrating type encapsulant designed specifically for removal of asbestos-containing material. Use a material which results in wetting the asbestos-containing material 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.

2.3 **GLOVEBAG**

Provide minimum 6 mil polyethylene, polyvinylchloride or equivalent plastic sack, with two sealed inward projecting longsleeved gloves or mittens, preprinted with same warning notice as a disposal bag, equipped with a pouch for storage of tools, with designated location for wand or HEPA vacuum wand, and sufficient capacity to hold removed materials and permit sealing as specified.

2.4 **HEPA FILTER VACUUM CLEANER**

Provide vacuum cleaner(s) manufactured specifically for use with HEPA filter. HEPA filter vacuum cleaners shall be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

2.5 **GARDEN SPRAYER**

Provide a hand pump type pressure 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**

Complete the following before start of work of this section:

- 01560 Worker Protection - Asbestos Abatement
- 01562 Respiratory Protection

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.

3.1 **SECURING WORK AREA**

Secure Work Area from access by occupants, staff, or users of the building. Accomplish this were possible by locking doors, windows, or other means of access to the Work Area, or by constructing temporary wood stud and plywood barriers.

3.2 **CONSTRUCTION OF MINI-ENCLOSURES**

A Mini-Enclosure consists of a Work Room with an attached separate Change Room. Worker decontamination requires a remote personnel decontamination unit. Before beginning work of this sub-section, construct a Personnel Decontamination Unit in accordance with Section 01563 - Decontamination Units. Remote Decontamination Unit shall be constructed in location designated by Project Consultant.

3.2.1 **Work Room**

Construct Work Room in the same manner as a Primary Barrier fabricated from 6 mil sheet plastic as specified in Section No. 01530. Arrange so that Primary Barrier provides both a Critical and Primary Barrier. Contractor may option to construct Work Room utilizing Critical Barriers as
specified in Section No. 01530, followed by a continuous sheet plastic barrier lining the walls and floor of the Work Area.

3.2.2 Change Room

Provide an approximately 3'-0" by 3'-0" Change Room, with additional space as required for storage, attached to each Work Room. Fabricate Change Room from 6 mil sheet plastic in the same manner as a Primary Barrier. Locate so that access to Work Area is through Change Room.

3.2.3 Step Off Area

Cover floor in front of entry to Change Room with one layer of 6 mil sheet plastic. Securely anchor or tape sheet plastic to prevent slipping.

3.2.4 Flapped Door Construction

Provide flapped door as entry to Change 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" 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.

3.2.5 Signage

At entry to Change Room post an approximately 20 inch by 14 inch 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
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

Provide spacing between respective lines at least equal to the height of the respective upper line.

3.3 TEMPORARY PRESSURE DIFFERENTIAL SYSTEM

Provide temporary pressure differential system as specified in Section No. 01513. When authorized by Project Consultant, HEPA filtered vacuum cleaner with body of vacuum located outside Work Room may be utilized. Provide a minimum of 8 air changes per hour in the Work Room.

3.4 ENTRY TO WORK ROOM

Require that any time a worker enter the Work Room the following procedure is followed:
Remove all street clothes outside of Change Room and don clean coveralls and respirator. A swimsuit or second disposable suit may be worn beneath outer coveralls.

After entry into Change Room, be sure that flapped door entry is completely closed. Enter Work Room and be sure that flapped door entry is completely closed.

3.5 GLOVEBAG REMOVAL METHOD

Remove asbestos-containing material inside a glovebag according to the following procedure:

Check pipe where the work will be performed. Wrap damaged (broken lagging, hanging, etc.), pipe in 6 mil plastic and "candy-stripe" with duct tape. Place one layer of duct tape around undamaged pipe at each end where the glove bag will be attached.

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).

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.

Place one strip of duct tape along the edge of the open top slit of glove bag for reinforcement.

Place the glove bag around section of pipe to be worked on and staple top together through reinforcing duct tape. Next, duct tape the ends of glove bag to pipe itself, where previously covered with plastic or duct tape.

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.

Insert wand from garden sprayer through water sleeve. Duct tape water sleeve tightly around the wand to prevent leakage.

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.

One worker shall place his hands into the long-sleeved gloves while a second worker directs garden sprayer at the work.

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.

Remove insulation using putty knives or other tools. Place pieces in bottom of bag without dropping.

Rinse all tools with water inside the bag and place back into pouch.
Using scrub brush, rags and water, scrub and wipe down the exposed pipe. 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.

Remove the vacuum nozzle, twist water sleeve closed and seal with duct tape.

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.

If more than one adjacent section of pipe is to be removed, glovebags may be used only once and may not be moved. Glovebags shall not be used on surfaces whose temperatures exceeds 150° F.

With removed insulation in the bottom of the bag, twist the bag several times and tape it to keep the material in the bottom during removal of the glove bag from the pipe.

Slip a 6 mil 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.

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 a surface with removal encapsulant may require the application of additional removal encapsulant to facilitate cleaning.

Seal exposed ends of remaining pipe insulation.

3.6 WORKER DECONTAMINATION

Require that any time a worker leaves the Mini-Enclosure the following procedure be followed.

Maintain a bucket of clean potable water in the Work Area. Do not amend with a wetting agent.

Remove contaminated suit inside the Work Area. Leave respirator in place.

Wash hands, face and surface of respirator with water and wet paper towels. Use caution to avoid breaking seal between respirator facepiece and face.

Proceed with respirator in place to Change Room. Be sure that flapped door entry to Work Area is completely closed.

In Change Room don clean disposable suit leaving respirator in place.

Exit Change Room and be sure that flapped door entry to Change Room is completely closed. Proceed to next Mini-Enclosure, or a remote shower.

At end of work day decontaminate fully in accordance with procedures specified in Section No. 01560 - Worker Protection.
3.7 MATERIAL DECONTAMINATION

Require that the following procedure be used in removing equipment and bagged debris from the Work Room.

Three workers are required; One in the Work Room, one in the Change Room, and one on Step Off Area.

Equipment and bagged debris are to be removed from the Mini-Enclosure in separate operations.

Collapse each bag of asbestos-containing waste materials 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.

Worker in Work Room shall clean equipment and bagged debris and hand one piece of equipment or one bag of debris at a time to worker in Change Room.

Worker in Change Room shall wet clean each piece of equipment or bag and then store them in Change Room. Equipment is shall be sealed completely in 6 mil sheet plastic in the Change Room.

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 Room and Clean Room is closed.

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.

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.

3.8 MINI-ENCLOSURE DECONTAMINATION

At completion of all work decontaminate the Work Room and Changing Room as set forth in Section No. 01711 - Project Decontamination. PCM Clearance Sampling shall be performed in Mini-Containments as specified in Section No. 01714 - Work Area Clearance.

END OF SECTION - 01530
SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

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

Respiratory protection is specified in Section 01562.

1.4 WORKER TRAINING

1.4.1 AHERA Accreditation:

All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

1.4.2 State License

All workers are to be trained, certified, and accredited as required by the TDSHS.

1.4.3 Training

Train all workers, in accordance with 29 CFR 1926, in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:

1.5 MEDICAL EXAMINATIONS

Provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926. In addition, provide an evaluation of the individuals ability to work in environments capable of producing heat stress in the worker.

1.6 SUBMITTALS

Submit all required documents identified in Section 01301 - Submittals to Project Consultant for review prior to the start of Work in any given Work Area. Do not begin work until these submittals are returned with Owner's and Project Consultant's approval.
PART 2 - EQUIPMENT

2.1 PROTECTIVE CLOTHING

2.1.1 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.

2.1.2 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. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos-containing material.

2.1.3 Hard Hats

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

2.1.4 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. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the Work.

2.1.5 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

Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Project Consultant, and other authorized representatives who may inspect the job site. Provide two (2) respirators and six (6) complete coveralls and, where applicable, six (6) respirator filter changes per day.

PART 3 - EXECUTION

3.1 GENERAL

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.
Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.2 DECONTAMINATION PROCEDURES

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

3.2.1 Type C Supplied Air or Powered Air-Purifying Respirators (PAPR)

Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area:

When exiting area, proceed to Work side entrance of equipment room and HEPA vacuum all large debris from coveralls, hard hats, boots, and other protective equipment. Remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.

Still wearing respirators, proceed to showers (showering is mandatory for all workers in all Work Areas). Thoroughly wet body including hair and face. If using a PAPR hold blower unit above head to keep canisters dry.

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. 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. Carefully wash facepiece of respirator inside and out.

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.

After showering completely with soap and water, rinse thoroughly and rinse the shower room walls and floor prior to exit. Proceed from shower to Changing Room, dispose of used filter cartridges, dry respirator components, and change into street clothes.

3.2.2 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:

When exiting area, proceed to Work side entrance of equipment room and HEPA vacuum all large debris from coveralls, hard hats, boots, and other protective equipment. Remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
Still wearing respirators, proceed to showers (showering is mandatory for all workers in all Work Areas). Thoroughly wet body from neck down. Wet hair as thoroughly as possible without wetting the respirator filter if using an air purifying type respirator.

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. Dispose of wet filters from air purifying respirator. Carefully wash facepiece of respirator inside and out.

After showering completely with soap and water, rinse thoroughly and rinse the shower room walls and floor prior to exit.

3.2.3 Remote Shower

The procedures above are to be used if the decontamination facility is used as a remote shower (i.e. a remote decontamination unit is used in a building or area of a building in which several mini-containments are being utilized). 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.

3.3 WITHIN WORK AREA

Workers may not, under any circumstances, 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.

3.4 CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

Following this section is a Certificate of Worker Acknowledgement. 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
CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

PROJECT NAME  University Park Elementary School  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, and 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.

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. The topics covered in the course must have included the following:

- Physical characteristics of asbestos
- Health hazards associated with asbestos
- Respiratory protection
- Use of protective equipment
- Pressure Differential Systems
- Work practices including hands on or on-job training
- Personal decontamination procedures

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, the Contractor.

Signature  Social Security No:  
Printed Name  Witness:  
SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials 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 STANDARDS

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


NIOSH - National Institute for Occupational Safety and Health

MSHA - Mine Safety and Health Administration

1.4 SUBMITTALS

Submit all required documents identified in Section 01301 - Submittals to Project Consultant for review prior to the start of Work in any given Work Area. Do not begin work until these submittals are returned with Owner's and Project Consultant's approval.
PART 2 - EQUIPMENT

2.1 SUPPLIED AIR RESPIRATOR SYSTEMS

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.

2.1.1 Face Piece and Hose

Provide full face piece 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 face-piece.

2.1.2 Auxiliary backup system

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

2.1.3 Escape air supply

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

2.1.4 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 face piece and hose assembly in the event of compressor shut-down, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the back-up air supply to allow a minimum escape time of one-half hour times the number of connections available to the Work Area. Air requirement at each connection is the air requirement of the respirators in use plus the air requirement of an average-sized adult male engaged in moderately strenuous activity.

2.1.5 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 compressor shut down or other fault requiring use of backup air supply and carbon monoxide (CO) levels in excess of 5 PPM/V.

2.1.6 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".

2.1.7 Compressor Shut Down

Interconnect monitors, alarms and compressor so that compressor is automatically shut down and the alarms sounded if CO concentrations exceed 5 PPM/v in the air line between the filter bank and backup air supply or if compressor temperature exceeds normal operating range.

2.1.8 Air Intake

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

2.2 AIR PURIFYING RESPIRATORS

2.2.1 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.

2.2.2 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 ANSI Z228.2. In addition, a chemical cartridge section 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.

PART 3 - EXECUTION


Require that respiratory protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for reoccupancy in accordance with Section 01714. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.

3.1 FIT TESTING

3.1.1 Initial Fitting

Provide initial fitting of respiratory protection during a respiratory protection course of training. Fit types 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.
3.1.2 Periodic Fitting

On a Weekly Basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube. 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 (1980).

3.2 TYPE OF RESPIRATORY PROTECTION REQUIRED

Provide respiratory protection as indicated below. Where information outlined below does not apply, determine the proper level of protection by dividing the expected or actual airborne fiber count in the Work Area by the "protection factors" given below.

Contractor shall provide Project Consultant, Project Consultant's employees, and authorized visitors with suitable respirators whenever they are required to enter the work area.

3.2.1 Type "C" Supplied-air respirators

Full facepiece pressure demand supplied air respirators are to be used by all workers engaged in the removal of asbestos insulation or coverings, or any other activity which results in or may result in airborne asbestos fibers.

3.2.2 Respirator Downgrading

For the Work described in these Contract Documents, Contractor shall be allowed to downgrade to a lower protection factor respirator if Contractor can provide documentation that his removal techniques are not creating an atmosphere hazardous to his employees.

Documentation submitted to Project Consultant for the purpose of downgrading respirator protection shall consist of personnel and inside containment air sample analysis from three (3) previous projects of similar Work for each Work Area. Should downgrade of respirator protection be approved by Project Consultant, the downgrade will be to a minimum of full-face, NIOSH-Approved, powered air-purifying respirator (PAPR) for all workers engaged in removal activities.

Contractor personnel may perform the following activities wearing a half-face, NIOSH-approved, negative pressure respirator: precleaning the Work Area, prepping the Work Area, some cleaning activities if approved by Project Consultant, and loading asbestos waste material into dumpster or transport vehicle.

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.
3.3 PERMISSIBLE EXPOSURE LIMIT (PEL)

For purposes of this section, fibers are defined as all fibers regardless of composition as counted in the NIOSH 7400 procedure. 8-Hour Time Weighted Average (TWA) and Ceiling (excursion) Limit of asbestos fibers to which any worker may be exposed shall not exceed the following:

A. Time Weighted Average (TWA) - 0.1 fibers/cubic centimeter (f/cc)
B. Ceiling Limit (30 minute sampling period) - 1.0 f/cc

3.4 RESPIRATORY PROTECTION FACTOR

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<tr>
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<th>Protection Factor</th>
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<tbody>
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<td>Negative pressure respirator</td>
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<td>High efficiency filter</td>
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<td>High efficiency filter</td>
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<td>Full facepiece</td>
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<td>Equipped with an auxiliary positive pressure</td>
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<td>Self-contained breathing apparatus (SCBA)</td>
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END OF SECTION 01562
SECTION 01563 - DECONTAMINATION UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

Provide separate Personnel and Equipment Decontamination facilities in each Work Area unless otherwise authorized by Project Consultant. 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

Refer to Section 01503 Temporary Facilities for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water, sewer, and electrical.

1.4 SUBMITTALS

Submit all required documents identified in Section 01301 - Submittals to Project Consultant for review prior to the start of Work in any given Work Area. Do not begin work until these submittals are returned with Owner's and Project Consultant's approval.

PART 2 - PRODUCTS

2.1 SHEET PLASTIC

2.1.1 Polyethylene Sheeting

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, 4.0 or 6.0 mil thick as indicated, frosted or black as indicated.

2.1.2 Plywood Barrier Walls

Where no hard barrier walls separate the Work Area from outside the work area (e.g., clean room, building exterior, occupied areas of the building, stair wells) provide plywood walls that conform to requirements set forth by the National Fire Protection Association Standard.

2.2 MISCELLANEOUS MATERIALS

2.2.1 Duct Tape

Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.
2.2.2 Spray Adhesive

Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

2.2.3 Shower Pan

Provide one piece waterproof shower pan 4' x 8' by 6" deep. Fabricate from seamless fiberglass minimum 1/16" 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 thick elastomeric membrane.

2.2.4 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.

2.2.5 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.

- Primary Filter - Passes particles 20 microns and smaller
- Secondary Filter - Passes particles 5 microns and smaller

2.2.6 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' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4'-0" 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.

PART 3 - EXECUTION

3.1 PERSONNEL DECONTAMINATION UNIT

Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Drying Room, Shower Room, Equipment Room. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any purpose. Do not allow parallel routes for entry or exit. Do not remove equipment or materials through Personnel Decontamination Unit. Provide temporary lighting within Decontamination Units as necessary to reach a lighting level of 100 foot candles.
3.1.1 Changing Room (clean room)

Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

Construct using plywood and polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building. Locate so that access to Work Area from Changing Room is through Shower Room. The clean room shall be constructed a minimum of 30 feet by 30 feet dimensions. Separate Changing Room from the building by a sheet plastic flapped doorway and securable door.

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.

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 Project Consultant in writing prior to start of construction. Submit written request in accordance with Section 01632 "Product Substitutions" detailing layout and protective measures proposed.

Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room. Damp wipe all surfaces twice after each shift change with a disinfectant solution. Provide posted information for all emergency phone numbers and procedures. Provide 1 storage locker per employee.

3.1.2 Drying Room

Provide a drying room as an airlock and a place for workers to dry after showering. Separate this room from the rest of the building with airtight walls fabricated of 6 mil polyethylene. Separate this room from the Changing Room and Shower Room with a sheet plastic flapped doorway. Provide a continuously adequate supply of disposable bath towels.

3.1.3 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.

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.

Separate this room from the Drying Room with a sheet plastic flapped doorway.

Provide shower head and controls. Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition. Provide flexible hose shower head.
Arrange so that water from showering does not splash into the Changing or Equipment Rooms. 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.

Pump waste water to sanitary sewer drain. Provide 20 micron and 5 micron waste water filters in line to drain. 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.

3.1.4 Equipment Room (contaminated area)

Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

Separate this room from the Work Area and Shower Room by a 6 mil polyethylene flapped doorway.

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 Work Area 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.

3.1.5 Decontamination Sequence

Require that all workers adhere to the following sequence when entering or leaving the Work Area.

A. 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.

   Any additional clothing and equipment left in Equipment Room needed by the worker are put on in the Equipment Room.

B. Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet.

C. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.

D. Extra work clothing such as boots, hard hats, goggles, gloves are to be stored in contaminated end of the Equipment Room.

E. Disposable coveralls are placed in a bag for disposal with other material.

F. Require that Decontamination procedures found in Section 01560 be followed by all individuals leaving the Work Area.

G. After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

Section 01563-4
3.2 EQUIPMENT DECONTAMINATION UNIT

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.

3.2.1 Wash Down Station

Provide an enclosed Shower Unit located in Work Area just outside Wash Room as an equipment, bag and container cleaning station.

3.2.2 Wash Room

Provide Wash Room for cleaning of bagged or containerized asbestos-containing waste materials passed from the Work Area and for double bagging of waste materials.

Construct wash room of polyethylene sheeting, at least 6 mil in thickness and located so that packaged materials, after being wiped clean, can be passed to the Holding Room. Separate this room from the Work Area by a single flapped door of 6-mil polyethylene sheeting.

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.

3.2.3 Holding Room

Provide Holding Room as a drop location for bagged asbestos-containing materials passed from the Wash Room. All generator and contractor labels shall be in place on all bagged waste prior to leaving the Holding Room.

Erect Critical and Primary Barriers as described in Section 01526 "Temporary Enclosures" in an existing space. If no space exists construct Clean Room of 2X wood framing and polyethylene sheeting, at least 6-mil in thickness. Separate this room from the exterior by a single flap door of 6-mil polyethylene sheeting.

3.2.4 Clean Area

Provide for a clean area outside of the Holding Room at the building exterior. If possible locate to provide direct access to the Holding Room from the building exterior.

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.

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.
3.2.6 Decontamination Sequence

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

A. At washdown station, thoroughly wet clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.

B. 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.

C. Once inside the washroom, wet clean the bags and place into second disposal bag and wet clean all equipment.

D. When cleaning is complete pass items into Holding Room. Close all doorways except the doorway between the Holding room and the building exterior. All contractor and generator labels shall in place prior to leaving the Holding Room.

E. Workers from the building exterior enter Holding Room and remove decontaminated equipment and/or containers for disposal.

F. Require these workers to wear full protective clothing and appropriate respiratory protection.

3.3 CONSTRUCTION OF THE DECONTAMINATION UNITS

3.3.1 Walls and Ceiling

Construct airtight walls and ceiling using polyethylene sheeting, at least 6 mil in thickness. Attach to existing building components or a temporary framework.

3.3.2 Floors

Use 2 layers (minimum) of 6 mil polyethylene sheeting to cover floors in all areas of the Decontamination Units. Use only clear plastic to cover floors.

3.3.3 Flap Doors

Fabricated from three (3) overlapping sheets with openings a minimum of three feet (3') wide. Configure so that sheeting overlaps adjacent surfaces. Weigh sheets at bottoms 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') between entrance and exit of any room. Provide a minimum of three feet (3') between doors to airlocks.

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 hardboard or 1/2 inch plywood "ceiling" with polyethylene sheeting, at least 6 mil in thickness covering the top of the "ceiling".
3.3.4 Visual Barrier

Where the Decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the Decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/4 inch thick hardboard or 1/2 inch plywood. Where the solid barrier is provided, sheeting need not be opaque.

Alternate methods of providing Decontamination facilities may be submitted to the Project Consultant for approval. Do not proceed with any such method(s) without written authorization of the Project Consultant.

3.4 CLEANING OF DECONTAMINATION UNITS

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.

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

Post an approximately 20 inch by 14 inch 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. Provide signs in both English and Spanish.

LEGEND

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

Provide spacing between respective lines at least equal to the height of the respective upper line.

END OF SECTION 01563
SECTION 01601 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 General Requirements, apply to this Section.

1.2 SUMMARY

This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the project.

The Contractor's Construction Schedule and the Schedule of Submittals are included under Section No. 01301 - Submittals. Refer to Section No. 01091 - Definitions and Standards for applicability of industry standards to products specified. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section No. 01632 - Product Substitutions.

1.3 DEFINITIONS

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.

Products: Items purchased for use in performing the work or 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.

Named Products: Items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

Materials: Products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

Operational Equipment: Products with operating parts, whether motorized or manually operated, that requires temporary or permanent service connections, such as wiring or piping.

Fixed Equipment: Products necessary for accomplishing the work that are used as a temporary facility during the work and removed afterward.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
Schedule delivery to minimize long-term storage at the site and overcrowding of construction spaces. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

1.5 SUBMITTALS

Submit all required documents identified in Section 01301 - Submittals to Project Consultant for review prior to the start of Work in any given Work Area. Do not begin work until these submittals are returned with Owner's and Project Consultant's approval.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

Product selection is governed by the Contract Documents and governing regulations, not by previous project experience. Procedures governing product selection include the following:

When the 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.

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.
Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

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.

Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01601
SECTION 01632 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

The Contractor's Construction Schedule and the Schedule of Submittals are included under Section No. 01301 - Submittals. Refer to Section No. 01091 - Definitions and Standards for applicability of industry standards to products specified. Procedural requirements governing the Contractor's selection of products and product options are included under Section No. 01601 - Materials and Equipment.

1.3 DEFINITIONS

Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

Substitutions requested by Proposers during the Proposal period and accepted prior to award of Contract are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.

Revisions to Contract Documents requested by the Owner or Project Consultant.

Specified options of products and construction methods included in Contract Documents.

The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

Requests for substitution will be considered if received within 3 weeks prior to beginning work affected by the substitution. Requests received less than 3 weeks before commencement of affected Work may be considered or rejected at the discretion of the Project Consultant.
1.4.1 Substitution Request Submittal

Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order.

Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

Product Data, including Drawings and descriptions of products, fabrication, installation procedures, and manufacturer's instructions for use

Samples, where applicable or requested

A detailed comparison of significant qualities of the proposed substitution with those of the work specified; significant qualities may include elements such as size, weight, durability, performance and visual effect

Coordination information, including a list of changes or modifications needed for other parts of the work and for construction performed by the Owner and separate contractors that will become necessary to accommodate the proposed substitution

A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution, and an indication of the effect of the proposed substitution on overall Contract Time.

Cost information, including a Proposal of the net change, if any in the Contract Sum.

Certification by the Contractor that the substitution proposed is in every significant respect equal to or better than that required by the Contract Documents, and that it will perform adequately in the application indicated. Include 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.

1.4.2 Project Consultant's Action

Within one week of receipt of the request for substitution, the Project Consultant will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Project Consultant will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

The Contractor's substitution request will be received and considered by the Project Consultant when one or more of the following conditions are satisfied, as determined by the Project
Consultant; otherwise requests will be returned without action except to record noncompliance with these requirements:

Extensive revisions to Contract Documents are not required.

Proposed changes are in keeping with the general intent of Contract Documents.

The request is timely, fully documented, and properly submitted.
The request is directly related to an "or equal" clause or similar language in the Contract Documents.

The specified equipment, product or method of construction cannot be provided within the Contract Time. The request will not be considered if the equipment, product or method cannot be provided as a result of failure to pursue the work promptly or coordinate activities properly.

The specified equipment, product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

A substantial advantage is offered the Owner, in terms of safety, cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Project Consultant for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

The specified equipment, product or method of construction cannot be provided in a manner that is compatible with other materials, and the Contractor certifies that the substitution will overcome the incompatibility.
The specified equipment, product or method of construction cannot be coordinated with other materials, and the Contractor certifies that the proposed substitution can be coordinated.

The specified equipment, product or method of construction cannot provide a warranty required by the Contract Documents and the Contractor certifies that the proposed substitution provides the required warranty.

PART 3 - EXECUTION  (Not Applicable).

END OF SECTION 01632
SECTION 01701 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1.2.1 Final Acceptance
1.2.2 Project Record Document Submittal
1.2.3 Final Cleaning

1.3 FINAL ACCEPTANCE

Submit the Final Payment Request with releases and supporting documentation not previously submitted and accepted. Include Certificates of Insurance for products and completed operations where required. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

Submit a certified copy of the Project Consultant's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Project Consultant.

The Project Consultant will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Project Consultant.

Upon completion of reinspection, the Project Consultant will issue final acceptance, or advice the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

1.4 RECORD DOCUMENT SUBMITTALS

Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Project Consultant's reference during normal working hours.

1.4.1 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 whichever 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.
Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work. Note related Change Order numbers where applicable. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

1.4.2 Record Specifications

Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

Upon completion of the work, submit record Specifications to the Project Consultant for the Owner's records.

1.4.3 Record Product Data

Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in the 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. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark up of record Drawings and Specifications.

Upon completion of mark up, submit complete set of record Product Data to the Project Consultant for the Owner's records.

1.4.4 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, properly identified and bound or filed, ready for continued use and reference. Submit to the Project Consultant for the Owner's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

General cleaning during construction is required by the General Conditions and included in Section No. 01503 - Temporary Facilities. The following procedures shall be completed at the completion of Work in each Work Area.
3.1.1 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.

Complete the following cleaning operations before requesting inspection:

Remove labels that are not permanent labels.

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 reflective condition. Leave concrete floors broom clean.

Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures as needed.

3.1.2 Removal of Protection

Remove temporary protection and facilities installed for protection of the work during construction.

Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01701
SECTION 01711 - PROJECT DECONTAMINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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 REQUIREMENTS

The following requirements consist of decontamination of the Work Area following asbestos abatement.

During the Work of these Contract Documents, Project Decontamination procedures require cleaning and decontamination of the Work Areas following abatement activities. Contractor shall utilize HEPA-vacuum, wet cleaning, and encapsulant during decontamination of the Work Areas.

Operation of the pressure differential system is used to remove airborne fibers generated during the decontamination procedures.

1.3 RELATED WORK SPECIFIED ELSEWHERE

1.3.1 Removal of Gross Debris

Removal of Gross Debris is integral with the performance of abatement work and as such is specified in Section No. 02081 - Removal of Asbestos-Containing Material and Debris.

1.3.2 Work Area Clearance

Air testing and other requirements which must be met before release of Contractor and reoccupancy of the work area are specified in Section 01714 Work Area Clearance.

PART 2 - PRODUCTS

2.1 WETTING MATERIALS

All surfaces in the Work Areas shall be wet-cleaned using rags, mops, and sponges as appropriate.

2.2 HEPA VACUUM

A sufficient supply of HEPA filtered vacuum systems shall be available during decontamination procedures.
2.3 ENCAPSULANT

Encapsulant shall be sprayed using airless spray equipment. Nozzle pressure should be adjustable within a 400 to 1,500 psi range. The nature of the encapsulant may affect the requirements for respiratory protection. Vapors that may be given off during encapsulation application must be taken into account when selecting respirators. Provide material safety data sheets.

PART 3 - EXECUTION

Work of this section includes the decontamination of air in each 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.

Work of this section includes the cleaning, decontamination, and removal of temporary facilities installed prior to the Work, including:

Primary and Critical Barriers erected by Work of Section No. 01526
Decontamination Unit erected by Work of Section No. 01563
Pressure Differential System installed by Work of Section No. 01513

Work of this section includes the cleaning, and decontamination of all surfaces (ceiling, walls, floor) of each Work Area, and all furniture or equipment in the Work Area.

3.1 WORK AREA CLEANING

All surfaces in the work area shall be wet-cleaned using rags, mops, and sponges as appropriate. Surfaces to be wet-cleaned include, but are not limited to, remaining plastic sheeting, tools, equipment, and scaffolding.

All containerized waste shall be removed from the work area using the waste container load-out air lock. All tools and equipment shall be decontaminated and removed at the appropriate time in the cleaning sequence.

Do not perform dry dusting or dry sweeping. Continue this cleaning until there is no visible debris from the removed material or residue on plastic sheeting or other surfaces.

Project Consultant shall inspect and approve of cleaning results prior to proceeding. If any accumulation of residue is observed, it will be assumed to be asbestos and the cleaning cycle will be repeated.

The work area shall be cleaned until it is in compliance with federal, state, and local requirements and the Work Procedures. Additional cleaning cycles shall be provided, as necessary, at no cost to the Owner until these criteria have been met.

3.2 VISUAL INSPECTION

Project Consultant shall complete a visual inspection of the entire Work Area including: all surfaces, ceiling, walls, floor, decontamination unit, seals over ventilation openings, doorways, windows, and other openings. If any debris, residue, dust or other matter is found repeat final
cleaning and continue decontamination procedure from that point. When the Work Area is visually clean, no debris, residue, dust or other material is found, Project Consultant will schedule Clearance Testing for the Work Area.

Provide a minimum of 100 foot candles of lighting on all surfaces in the areas to be subjected to visual inspection. Provide hand held lights providing 150 foot candles at 4 feet capable of reaching all locations in work area. Provide ladders, scaffolding, and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection.

3.3 ENCAPSULATION OF WORK AREA

Perform encapsulation of the plastic sheeting and all exposed building components at this time. Maintain Pressure Differential System in operation during encapsulation work.

Unless otherwise directed by Project Consultant, allow encapsulant to dry, while negative air machines are kept running to remove airborne asbestos fibers.

Critical Barriers and Pressure Differential System shall remain in place until Clearance has been achieved.

3.4 REMOVAL OF WORK AREA ISOLATION

After all requirements of this section and Section 01714 - Work Area Clearance have been met, shut down and remove the Pressure Differential System. Seal HEPA filtered fan units, HEPA vacuums and similar equipment with 6 mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area.

Remove Personnel Decontamination Unit.

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.

Dispose of all asbestos-containing waste material, plastic sheeting, and expired filters from HEPA fan units as specified in Section 02084 - Disposal of Asbestos Containing Waste Material.

END OF SECTION - 01711
SEC

TION 01714 - WORK AREA CLEARANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.1.1 Visual Inspection

Visual Inspection requirements, as prerequisites of air testing, are set forth in Section No. 01711 - Project Decontamination.

1.1.2 Air Monitoring

Air Monitoring performed by the Owner during abatement work, is described in Section No. 01410 - Test Laboratory Services.

1.2 SUMMARY

This section describes work being performed by the Owner. This work is not in the Contract Sum. This Section sets forth required post-abatement airborne asbestos concentrations in the Work Area and describes testing procedures the Owner will use to measure these levels.

1.3 CONTRACTOR RELEASE CRITERIA

An Asbestos Abatement Work Area is Cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified in Article 1.5 below.

1.4 VISUAL INSPECTION

Work of this Section will not begin until the visual inspection described in Section No. 01711 - Project Decontamination has been completed by Project Consultant.

1.5 AIR MONITORING

To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the Owner will secure and analyze samples according to the procedures set forth in this section. All samples, including clearance samples, will be collected by either a licensed air monitoring technician or a licensed consultant. The sample pumps will be monitored during the sampling period by the person collecting the samples, or some other means of control will be established to ensure the integrity of the samples and prevent tampering.

Aggressive sampling procedures as described below will be followed. Work area containments will be cleared by using aggressive TEM air sampling and analysis. Clearance will be achieved if the average of all five samples collected inside the containment is less than 70 s/mm² as reported from the licensed laboratory. Any area whose air test do not meet AHERA clean air
standards will be re-tested following re-cleaning of those areas. Any related costs associated with any re-testing will be the responsibility of the Contractor.

Clearance samples shall be collected following a final visual inspection of the abatement area to determine if the project has been properly conducted in accordance with the project specifications and all applicable local, state, and federal regulations and all ACM has been properly removed.

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 Work Area.

In each Work Area after completion of all cleaning work, a minimum of 3 samples will be collected and analyzed. Samples will be collected on 0.8 mixed cellulose ester filters in 25 mm cassettes with a 50 mm conductive extension cowling.

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>Number of Samples</th>
<th>Analysis Method</th>
<th>Clearance Level (f/cc)</th>
<th>Minimum Volume (L)</th>
<th>Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>70 s/mm²</td>
<td>1,250</td>
<td>1-9.5</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>5</td>
<td>TEM</td>
<td>HOLD</td>
<td>1,250</td>
<td>1-9.5</td>
</tr>
<tr>
<td>Field Blanks</td>
<td>2</td>
<td>TEM</td>
<td>HOLD</td>
<td>N/A</td>
<td>Open for 30 seconds</td>
</tr>
<tr>
<td>Sealed Blanks</td>
<td>1</td>
<td>TEM</td>
<td>HOLD</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

If these conditions are not met then the decontamination is incomplete and the cleaning procedures of Section 01710 shall be repeated.

1.6 LABORATORY TESTING

The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, or samples will be sent daily by overnight mail, 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 Consultant's Project Manager, the Owner and the Abatement Contractor.

1.7 LABORATORY TESTING

The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, or samples will be sent daily by overnight mail, 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 Project Consultant, the Owner and the Contractor.
1.8 RETESTING

The cost of laboratory services for retests and reinspections required due to failure of the Contractor to meet project criteria will be backcharged by Owner to the Contractor at Owner’s cost plus 20%.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01714
SECTION 02081 - REMOVAL OF ASBESTOS CONTAINING MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Reference Drawings and general provisions of the Contract, including the General and Supplementary Conditions and other Division 1 General Requirements, apply to work of this section.

1.2 DESCRIPTION OF WORK

The abatement of asbestos-containing chalkboard and mastic, ceiling tile mastic, roof flashing, window caulk, pipe insulation and pipe insulation fittings, flooring and mastic, and wallboard walls and ceilings as indicated on the Reference Drawings.

Contractor shall be responsible for installing the critical barriers, constructing the work containment, and scheduling the shutdown of all control systems located in or passing through the work areas. Contractor shall be responsible for removing the asbestos-containing insulation, decontaminating the remaining substrates, encapsulating all remaining surfaces inside the work containment, properly transporting the asbestos-containing waste and asbestos-contaminated waste to the remote dumpster location and disposal of the ACM waste to an approved landfill. The Work shall be performed in accordance with the requirements of all applicable sections of these Specifications. Contractor shall perform the Work in a manner that minimizes disruption to building operations.

1.3 EXISTING CONDITIONS

Existing conditions are reflected accurately to the best of Owner's knowledge. Should minor conditions be encountered that are not exactly as indicated, modification to the Work shall be made as required at no additional expense to Owner. Contractor is responsible for thoroughly familiarizing himself with all conditions and requirements of the Work, including ACM locations and quantities, prior to submittal of a Proposal. Contractor shall refer to the reference drawings listed in Appendix A of the Contract Documents for assistance in identifying ACM locations and quantities. These reference drawings shall not be relied on as exact ACM locations and quantities, but as estimated ACM locations and rough estimates of ACM quantities. Reliance on these documents shall in no way relieve Contractor of the responsibility for performing the Work necessary to abate all ACM without additional cost to Owner.

1.4 BUILDING OCCUPANCY

Owner and non-asbestos trades may occupy portions of the project not designated for abatement to conduct normal and routine business/maintenance and construction activities during the abatement operations. Contractor shall coordinate work activities with Owner to minimize conflict and facilitate usage of the building. Contractor shall conduct his activities in a manner that minimizes disturbance of the building occupants.

Transportation routes shall be predetermined and approved in advance by Owner for transportation of contaminated waste materials, labor, and construction materials in and out of the building. Contractor shall use only designated entrances and exits in transporting contaminated waste, labor, and construction materials to the designated area.
1.5 OBSERVATIONS

Project Consultant will monitor the status and progress of the Work for completeness and general compliance with the requirements of the Contract Documents. At a minimum, assessments will be conducted at the following times during the Project:

* Following complete preparation of the work area(s) and prior to proceeding with actual removal of ACM

* During removal of asbestos-containing materials as identified in Paragraph 1.2 of this section

* At designated times during the cleaning phases

* Following initial and final cleaning of the work area

* As appropriate during the Work outlined elsewhere in these Specifications

Contractor shall notify Project Consultant at least two hours in advance of the need and readiness for such assessments. Should advance notice not be given to Project Consultant, Project Consultant will make reasonable effort to comply with time requested. Contractor may not proceed until Project Consultant makes such assessments. Any delay in the completion of the Project caused by lack of advance notice by Contractor to Project Consultant shall not be sufficient cause for any extension of time or extension of the project completion deadline.

1.6 SIGN-IN/SIGN-OUT LOG

Contractor shall maintain a sign-in/sign-out log in the immediate vicinity of the change room of the personnel decontamination enclosure. The sign-in/sign-out log will be maintained from the time the first activity involving the disturbance of ACM is performed until acceptance of the final air test results by Project Consultant. All persons entering the work area, including Contractor's workers, Owner or Project Consultant, and government officials, will be required to sign in and out each time they enter and leave the work area, indicating name, social security number, time, company or agency represented, and reason for entering the work area.

PART 2 - PRODUCTS

2.1 WETTING MATERIALS

Prior to disturbing ACM, use amended water for wetting. Sprayers shall have pumps capable of providing 500 pounds per square inch (psi) at the nozzle tip at a flow rate of 2 gallons per minute for spraying wetting materials.

2.1.1 Amended Water

Provide water to which a surfactant has been added. Use a mixture of surfactant and water that will provide the same, or better, results in wetting the ACM and retarding fiber release during disturbance of the material as are achieved by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.
2.2 POLYETHYLENE SHEETING

Contractor shall 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. Polyethylene sheeting for walls and stationary objects shall be a minimum 4-mil thickness. For floors and all other uses, sheeting of at least 6-mil thickness shall be used in widths selected to minimize the frequency of joints and seams.

Polyethylene sheeting utilized for worker decontamination enclosures shall be opaque if the decontamination enclosure is visible to building occupants.

2.3 DISPOSAL BAGS

Disposal bags shall be of 6-mil polyethylene, preprinted with labels as required by EPA regulation 40 CFR 61.152 (b) (i) (iv), OSHA requirement 29 CFR 1910.1001 (g) (2) (ii), and Section 02084 - Disposal of Asbestos-Containing Waste Material of these Specifications.

2.4 PROTECTIVE CLOTHING

Full-body disposable protective clothing, including head, body, and foot coverings consisting of material impenetrable by asbestos fibers, shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

Additional safety equipment, as necessary, shall be provided to all workers and authorized visitors.

Nonskid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

2.5 CLEANING SUPPLIES

A sufficient supply of disposable mops, rags, and sponges for work area decontamination shall be available. Rubber dustpans and rubber squeegees shall be provided for cleanup. Brushes utilized for removing loose ACM shall have nylon or fiber bristles, not metal.

2.6 ENCAPSULANT

Encapsulant shall be sprayed using airless spray equipment. Nozzle pressure should be adjustable within a 400- to 1,500-psi range.

The nature of the encapsulant may affect the requirements for respiratory protection. Vapors that may be given off during encapsulation application must be taken into account when selecting respirators. Contractor shall provide material safety data sheets (MSDSs) prior to application of the product.
PART 3 - EXECUTION

3.1 PRIMARY BARRIER

Isolation and precleaning of the work area, lockout of building systems, installation of critical barriers, and construction of a primary barrier shall be completed as specified in Section 01526 - Temporary Enclosures or Section 01530 - Mini-Containment/Glovebag Procedures of these Contract Documents.

3.2 PRESSURE DIFFERENTIAL SYSTEM

Design and operation of the temporary pressure differential system shall be performed as specified in Section 01513 - Temporary Pressure Differential and Air Circulation System of these Contract Documents.

3.3 SECONDARY BARRIER

Over the primary barrier, install as a drop cloth a clear 6-mil sheet plastic in all areas where asbestos removal work is to be carried out. Completely cover the floor with sheet plastic. Where the Work is within 10 feet of a wall, extend the secondary barrier up the wall to the ceiling. Support the sheet plastic on the wall with duct tape, seal the top of the secondary barrier to the primary barrier with duct tape so that debris cannot filter behind it. Provide cross-strips of duct tape at the wall support as necessary to support the sheet plastic and prevent its falling during removal operations.

Install the secondary barrier at the beginning of each work shift. Install only sufficient plastic for work of that shift. Remove the secondary barrier at the end of each work shift or as work in an area is completed. Fold the plastic toward the center of the sheet and pack into disposal bags. Keep the material on the sheet continually wet until bagged.

3.4 WORKER ENTRY AND EXIT

All workers and authorized personnel shall enter the work area through the worker decontamination unit. All personnel who enter the work area must sign the entry log, located in the clean room of the worker decontamination unit. Decontamination procedures specified in Section 01560 - Worker Protection of these Contract Documents shall be heeded by all personnel.

3.5 WORKER PROTECTION

Before beginning work with any material for which an MSDS has been submitted, provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times. Worker protection and respiratory protection procedures shall be followed as specified in Section 01560 - Worker Protection and Section 01562 - Respiratory Protection, respectively.

Contractor shall collect OSHA personnel samples (8-hour TWA and STEL) during each phase of the project. Results of Personnel samples shall be posted on-site within 24 hours of collection.
3.6 WET REMOVAL

Thoroughly wet, to the satisfaction of Project Consultant, 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. Saturate material sufficiently without causing excess dripping. Allow time for amended water to penetrate material thoroughly. When using amended water, spray material repeatedly during the work process to maintain a continuously wet condition. Perforate outer covering of any installation that has been painted and/or jacketed in order to allow penetration of amended water or use injection equipment to wet material under the covering. Where necessary, carefully strip away while simultaneously spraying amended water on the installation to minimize dispersal of asbestos fibers into the air.

All ACM shall be thoroughly wetted prior to and during removal. ACM may be performed by manual or motorized chipping mechanisms; however, contractor shall ensure that material is maintained in a wet condition for the duration of the project. Following completion of floor tile removal, floor tile mastic will be removed utilizing mastic remover with a flash point of greater than 140°F.

Remove saturated ACM in small sections from all areas. Do not allow the material to dry out. As it is removed, simultaneously pack the material while still wet into disposal bags. Twist the neck of each bag, fold the neck over, and seal it with a minimum three wraps of duct tape. Clean the outside of the bag and move it to the wash-down station adjacent to the material decontamination unit. **Bladder Bags (either manufactured or self-fabricated shall not be utilized on this Project unless waste material is double-bagged prior to placing into bladder bag system).**

During each day's Work, the wet ACM debris shall be bagged in 6-mil thick bags. All asbestos-containing waste shall be cleaned from the Work area floor prior to the end of each work shift. No ACM shall be allowed to lay on the floor overnight. Place warning labels on containers in accordance with OSHA Regulations 29 CFR 1910.1001 and 1926.1101 if not already preprinted on the containers.

After the completion of all stripping work, surfaces from which ACM have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible debris. At the completion of the removal activities, Contractor shall clean and decontaminate the Work Area in accordance with procedures specified in Section 01711 - Project Decontamination of these Specifications.

3.7 LOCAL VENTILATION AND COLLECTION SYSTEM

Provide local ventilation and collection systems as described below for each area where ACM is being removed or otherwise disturbed:

* Provide HEPA-filtered fan units, in addition to those required by Section 01513 - Temporary Pressure Differential and Air Circulation System, in the vicinity of the Work. Arrange the fans so that the units exhaust into the work area, oriented in a direction away from the Work. Extend a 12-inch diameter flexible, noncollapsing duct from the intake end to a point no more than 4 feet from any scraping or wire brushing activity.
3.8 FINAL CLEARANCE

After cleaning and decontamination procedures have been completed inside the work area and the Certification of Visual Inspection has been accepted, Contractor shall notify Project Consultant that work areas are ready for clearance air testing.

Upon notice, Project Consultant will schedule and arrange for the clearance air tests. Work area clearance testing shall be performed as specified in Section 01714 - Work Area Clearance of these Specifications.

Reestablishment of the work area shall occur only after cleanup procedures have been completed and clearance testing has been performed and documented to the satisfaction of Project Consultant.

3.9 DISPOSAL PROCEDURES

As the Work progresses, to avoid exceeding available storage capacity on-site, sealed and labeled containers of asbestos-containing waste materials shall be removed and transported to the prearranged disposal location as specified in Section 02084 - Disposal of Asbestos-Containing Waste Material.

END OF SECTION 02081
SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract and Division 1 Specification Sections, apply to work of this section. Section 01092 Codes and Regulations - Asbestos Abatement describes applicable federal, state and local regulations.

1.2 DESCRIPTION OF THE WORK

This section describes the disposal of Asbestos-Containing Materials. Disposal includes packaging of asbestos-containing waste materials. Disposal is to be accomplished by landfilling.

1.3 SUBMITTALS

Submit all required documents identified in Section 01301 - Submittals to Project Consultant for review prior to the start of Work in any given Work Area. Do not begin work until these submittals are returned with Owner's and Project Consultant's approval.

PART 2 - PRODUCTS

2.1 Disposal Bags

Provide 6 mil thick leak-tight polyethylene bags labeled with three labels with text as follows:

First Label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

Second 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 ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH
Third Label: Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised February 17, 1987:

RQ HAZARDOUS SUBSTANCE, SOLID, NOS, ORM-E, NA 2112 (ASBESTOS)

Fourth Label: For all asbestos-containing waste material to be transported off the facility site, label the containers or wrapped materials with the name and address of the waste generator and abatement contractor, and location at which the waste was generated, as required in 40 CFR 61.150 (a)(1)(v).

PART 3 - EXECUTION

Comply with the following sections during all phases of this work:

Section 01560 Worker Protection - Asbestos Abatement
Section 01562 Respiratory Protection

3.1 GENERAL

All waste is to be hauled by a TDSHS-licensed Asbestos Transporter.

Load all asbestos-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:

* Two 6 mil disposal bags
* Two 6 mil disposal bags and a fiberboard drum

Protect interior of truck and/or dumpster with Critical and Primary Barriers as described in Section 01526 - Temporary Enclosures. **Bladder Bags (either manufactured or self-fabricated shall not be utilized on this Project unless waste material is double-bagged prior to placing into bladder bag system).**

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. Do not transport disposal bagged materials on open trucks.

All bagged asbestos waste shall be bagged-out of containment on a daily basis or as director by Project Consultant. Bag-out procedures shall be performed with visual barriers obscuring public view of all workers, waste containers, and bag-out activities. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed dumpster container. Contractor shall be responsible for all permits and/or licenses for the transport vehicle and dumpster arrangements. Advise the landfill operator or processor, at least ten days in advance of transport, of the quantity of material to be delivered.
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.

Retain receipts and manifests from landfill for disposed materials. At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to Project Consultant.

END OF SECTION - 02084
Reference Drawings
NOTE: 1. ACM Pipe Insulation is located within Wet Walls and above Ceilings.
NOTE:  1. ACM Pipe Insulation is located within Wet Walls and above Ceilings.
NOTE: All Wallboard Ceilings and Walls are Asbestos Containing Material (ACM)

Asbestos Containing Material (ACM) Vinyl Flooring and Mastic

ACM Window Caulk