Addendum Cover Sheet

Project: Hillman Street Bldg 9 First Floor Renovations
181 Hillman Street
New Bedford, MA 02740

Contract #: 20192005

Date: June 7, 2019

Owner: New Bedford Department of Facilities and Fleet Management

Contractor: Bidders

Distribution:

- 294 Liberty Street
  New Bedford, MA 02740
  All Bidders

- Susan Bruce, Director New Bedford Purchasing Dept.

- Robert Bichel, DFFM Project Supervisor

- Mark Champagne, Director DFFM

- GLRA Files

Gorman Richardson Lewis Architects, Inc.

This Addendum forms part of the Construction Documents and modifies the original Bid Documents dated 5 June, 2019. Acknowledge receipt of this Addendum in the space provided on the bid form.

Description of Work:

- Added Asbestos Abatement Sections to Project Manual
- Requirement for new wood underlayment to encapsulate asbestos-containing floor material (mastic)

List of Addendum Documents

<table>
<thead>
<tr>
<th>Project Manual Section Number</th>
<th>Title</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 01 10</td>
<td>TABLE OF CONTENTS-Addendum 1</td>
<td>Revised TOC to include new Asbestos Abatement section and Revised Rough carpentry section.</td>
</tr>
<tr>
<td>06 10 00</td>
<td>ROUGH CARPENTRY – Addendum 1</td>
<td>Plywood Underlayment added to this section</td>
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<tr>
<td>02 28 20</td>
<td>ASBESTOS REMEDIATION - Addendum 1</td>
<td>New Section</td>
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</table>
Addendum #001

Asbestos Abatement Sections; Flooring Underlayment Clarification

<table>
<thead>
<tr>
<th>Drawings</th>
<th>Title</th>
<th>Changes</th>
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<tr>
<td>AD1-1</td>
<td>DEMOLITION FIRST FLOOR PLAN</td>
<td>Revise Demolition Plan Note 6 as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. REMOVE FLOOR FINISH TO CONCRETE SLAB. PREP SLAB FOR SCHED. FINISHES. NOTIFY ARCHITECT IF SLAB LEVEL IS LOWER THAN EXTERIOR RAMP LEVEL. NOTE: EXISTING TILE/WOOD FLOORING SYSTEM ABOVE CONCRETE SLAB HAS TESTED POSTIVE FOR ASBESTOS. REMOVE EXISTING FLOORING AT FULL LENGTH OF CORRIDOR 101, 102, 103, 104 IN ACCORDANCE WITH PROJECT MANUAL SECTION 02 28 20 ASBESTOS REMEDIATION-ADDENDUM 1.</td>
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<tr>
<td>AD1-1</td>
<td>DEMOLITION FIRST FLOOR PLAN</td>
<td>Add Demolition Plan Note 11 as follows:</td>
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<tr>
<td></td>
<td></td>
<td>11. IN ALL AREAS OTHER THAN THOSE NOTED PER DEMOLITION PLAN NOTE 6 (ABOVE) OR NOTED ON DRAWING A10-1 TO HAVE EXISTING FLOOR FINISH TO REMAIN, REMOVE FLOOR FINISH DOWN TO EXISTING WOOD SUBFLOOR AND ADHESIVE/MASTIC IN PREPARATION FOR INSTALLATION OF NEW PLYWOOD UNDERLAYMENT OVER EXISTING ADHESIVE/MASTIC. REMOVAL OF EXISTING FLOORING TO BE IN CONFORMANCE WITH PROJECT MANUAL SECTION 01 35 43 ENVIRONMENTAL PROCEDURES AND 02 28 20 ASBESTOS REMEDIATION-ADDENDUM 1.</td>
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<tr>
<td>A10.1</td>
<td>FIRST FLOOR FINISH PLAN</td>
<td>Add GENERAL FINISH NOTE 11 as follows:</td>
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<td></td>
<td>11. AT AREAS TO RECEIVE NEW FLOOR FINISH, INSTALL NEW PLYWOOD UNDERLAYMENT IN ACCORDANCE WITH PROJECT MANUAL SECTION 06 10 00 ROUGH CARPENTRY-ADDENDUM 1.</td>
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</tbody>
</table>

Attachment: New and Revised Project Manual Sections

ARCHITECT

Issued By: ___________________________ Date: 06/07/2019
George O’Neill
Gorman Richardson Lewis Architects
DIVISION 0  PROCUREMENT AND CONTRACTING REQUIREMENTS

INTRODUCTORY INFORMATION
00 01 01  PROJECT TITLE PAGE
00 01 05  ARCHITECT AND CONSULTANTS
00 01 10  TABLE OF CONTENTS - ADDENDUM 1
00 01 15  LIST OF DRAWINGS

00 11 00  INVITATION and ADVERTISEMENT

BIDDING REQUIREMENTS
00 20 30  EXISTING CONDITIONS
00 21 30  INFORMATION and INSTRUCTIONS TO BIDDERS
00 40 10  FORM FOR GENERAL BID
00 40 15  CERTIFICATE AS TO CORPORATE BIDDER (General/Prime Contractor)
00 40 20  INTRODUCTION TO PRIME/GENERAL CONTRACTOR UPDATE STATEMENT
00 40 21  DCAM PRIME/GENERAL CONTRACTOR
  UPDATE STATEMENT Effective: 30 March, 2010
00 40 30  BID SECURITY FORM
00 41 10  FORM FOR SUB-BID
00 41 15  CERTIFICATE AS TO CORPORATE BIDDER (SUBCONTRACTOR)
00 41 20  INTRODUCTION TO SUB-BIDDER UPDATE STATEMENT
00 41 21  DCAM SUB-BIDDER
  UPDATE STATEMENT Effective: 30 March, 2010
00 41 15  CERTIFICATE AS TO CORPORATE BIDDER (Subcontractor)
00 45 10  ADDENDUM RECEIPT CERTIFICATION FORM
00 45 19  NON-COLLUSION CERTIFICATION
00 45 20  TAX COMPLIANCE CERTIFICATION
00 45 21  VOTE OF CORPORATION AUTHORIZING EXECUTION OF CONTRACT
00 45 22  CERTIFICATION of NO USE UNDOCUMENTED WORKERS
00 45 24  OSHA CERTIFICATION REQUIREMENT

CONTRACTING REQUIREMENTS
00 52 00  INTRODUCTION TO OWNER/CONTRACTOR AGREEMENT
00 52 01  “CITY OF NEW BEDFORD STANDARD VERTICAL CONSTRUCTION CONTRACT For
  Projects Over $100,000 Subject to M.G.L. c149, §44A –F OWNER - CONTRACTOR
  AGREEMENT”
00 61 10  PERFORMANCE BOND
00 61 20  LABOR AND MATERIALS PAYMENT BOND
# INTRODUCTION TO GENERAL CONDITIONS OF THE CONTRACT

00 72 00

“CITY OF NEW BEDFORD GENERAL CONDITIONS STANDARD VERTICAL CONSTRUCTION CONTRACT For Projects over $100,000 Subject to M.G.L. c. 149, s. 44A-F”

Includes:

- INSTRUCTIONS TO BIDDERS For AFFIRMATIVE ACTION ISSUES
- BID SUBMISSION CHECKLIST
- SCHEDULE OF PARTICIPATION DISADVANTAGED/MINORITY / WOMAN BUSINESS ENTERPRISES
- LETTER OF INTENT
- MINORITY / WOMAN BUSINESS ENTERPRISE PROGRAM CONTRACTOR IDENTIFICATION STATEMENT
- BIDDERS CERTIFICATION
- MINORITY / WOMAN BUSINESS ENTERPRISES UNAVAILABILITY CERTIFICATIONS
- MINORITY / WOMAN/DISADVANTAGED BUSINESS ENTERPRISES REQUEST FOR WAIVER

00 73 43 INTRODUCTION TO WAGE RATE DETERMINATION SCHEDULE

00 73 44 PREVAILING WAGE RATE SCHEDULE

## DIVISION 1  GENERAL REQUIREMENTS

01 11 00 SUMMARY OF WORK
01 26 00 CONTRACT MODIFICATION PROCEDURES
01 29 00 PAYMENT PROCEDURES
01 31 13 COORDINATION
01 31 19 PROJECT MEETINGS
01 32 60 EXCEPTIONS
01 35 00 SUBMITTAL PROCEDURES
01 35 16 ALTERATION PROJECT PROCEDURES
01 35 43 ENVIRONMENTAL PROCEDURES
01 43 30 MOCK-UPS
01 45 00 QUALITY CONTROL
01 50 00 TEMPORARY FACILITIES AND CONTROLS
01 51 50 CONSTRUCTION INDOOR AIR QUALITY (IAQ) MANAGEMENT
01 60 00 MATERIAL AND EQUIPMENT
01 62 00 PRODUCT OPTIONS AND SUBSTITUTIONS
01 65 00 DELIVERY, STORAGE, AND HANDLING
01 73 29 CUTTING AND PATCHING
01 74 00 PROGRESS AND FINAL CLEANING
01 74 19 CONSTRUCTION WASTE MANAGEMENT
01 76 00 PROTECTING INSTALLED ROOFING
01 77 20 SUBSTANTIAL COMPLETION
01 77 21 SUBSTANTIAL COMPLETION CLOSEOUT MATRIX
01 77 30 PROJECT CLOSEOUT AND FINAL COMPLETION
01 77 31 FINAL COMPLETION CLOSEOUT MATRIX
### DIVISION 2  EXISTING CONDITIONS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tr>
<td>02 41 13</td>
<td>SELECTIVE DEMOLITION</td>
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<td>ASBESTOS REMEDIATION – ADDENDUM 1</td>
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### DIVISION 3  CONCRETE

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<tr>
<td>03 01 30</td>
<td>REPAIR of EXTERIOR CAST-IN-PLACE CONCRETE RAMPS &amp; STEPS</td>
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<td>CAST-IN-PLACE CONCRETE</td>
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### DIVISION 4  MASONRY

Not Used

### DIVISION 5  METALS

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<td>05 52 00</td>
<td>METAL FABRICATIONS</td>
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### DIVISION 6  WOOD, PLASTICS, AND COMPOSITES

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<tr>
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<td>FINISH CARPENTRY</td>
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### DIVISION 7  THERMAL and MOISTURE PROTECTION

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<tr>
<td>07 60 00</td>
<td>FLASHING AND SHEET METAL</td>
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<td>07 84 10</td>
<td>PENETRATION FIRESTOPPING</td>
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<td>JOINT SEALANTS</td>
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### DIVISION 8  OPENINGS

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<tr>
<td>08 11 00</td>
<td>HOLLOW METAL DOORS AND FRAMES</td>
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<tr>
<td>08 14 00</td>
<td>FLUSH WOOD DOORS</td>
</tr>
<tr>
<td>08 31 10</td>
<td>ACCESS DOORS AND FRAMES</td>
</tr>
<tr>
<td>08 41 13</td>
<td>ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS</td>
</tr>
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<td>08 71 00</td>
<td>DOOR HARDWARE</td>
</tr>
<tr>
<td>08 80 00</td>
<td>GLAZING</td>
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<td>08 91 19</td>
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### DIVISION 9  FINISHES

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<tr>
<td>09 21 16</td>
<td>GYPSUM BOARD ASSEMBLIES</td>
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<td>09 30 13</td>
<td>CERAMIC TILING <em>(Filed Sub-Bid Required)</em></td>
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<td>09 51 00</td>
<td>ACOUSTICAL CEILINGS <em>(Filed Sub-Bid Required)</em></td>
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<tr>
<td>09 65 00</td>
<td>RESILIENT FLOORING</td>
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<tr>
<td>09 68 13</td>
<td>TILE CARPETING</td>
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<tr>
<td>09 90 00</td>
<td>PAINTING AND COATING <em>(Filed Sub-Bid Required)</em></td>
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**DIVISION 10** | **SPECIALTIES**

| 10 14 00 | SIGNAGE |
| 10 21 13 | TOILET COMPARTMENTS |
| 10 28 13 | TOILET ACCESSORIES |
| 10 41 00 | EMERGENCY ACCESS AND INFORMATION CABINETS |
| 10 44 00 | FIRE-PROTECTION SPECIALTIES |

**DIVISION 11** | **EQUIPMENT**

| 11 30 13 | RESIDENTIAL APPLIANCES |

**DIVISION 12** | **FURNISHINGS**

| 12 24 13 | ROLLER SHADES |
| 12 35 30 | CASEWORK |

**DIVISION 13** | **SPECIAL CONSTRUCTION**

Not Used

**DIVISION 14** | **CONVEYING EQUIPMENT**

Not Used

**DIVISION 21** | **FIRE SUPRESSION**

Not Used

**DIVISION 22** | **PLUMBING**
22 00 00 PLUMBING (Filed Sub-Bid Required)

DIVISION 23 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

23 00 00 HVAC (Filed Sub-Bid Required)
23 05 48 VIBRATION CONTROL AND SEISMIC RESTRAINT

DIVISION 26 ELECTRICAL

26 00 00 ELECTRICAL (Filed Sub-Bid Required)

END OF DOCUMENT
PART I - GENERAL

1.01 GENERAL PROVISIONS

A. General Conditions, Supplementary Conditions and applicable parts of Division 1 form a part of this specification and the Contractor shall consult them in detail for instructions.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 RELATED WORK UNDER OTHER SECTIONS

A. Environmental Procedures

1.03 DESCRIPTION OF WORK

A. The work includes the complete removal and disposal of all asbestos containing materials (ACM) as indicated in Part 3 of this Section.

B. The General Contractor shall retain the services of a Massachusetts licensed asbestos abatement contractor and shall include in his scope of work all required services included in Part 3.

1.04 POTENTIAL ASBESTOS HAZARD & DEBRIS

A. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, take appropriate continuous measures as necessary to protect all building occupants from the 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.

B. If the Contractor failed to comply with the requirements of the specifications, the Owner’s Representative (Industrial Hygienist) may present a written stop of work order. The Contractor must immediately and automatically stop all work until authorized in writing by the Industrial Hygienist to commence work. All costs related to delays shall be at the Contractor’s expense.

1.05 DEFINITIONS

A. Abatement: Procedures to control fiber release from ACM. Includes encapsulation, enclosure, and removal.

B. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period.

C. Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers, which may reach the breathing zone.
D. Asbestos: The name given to several naturally occurring hydrated mineral silicates that possess a unique crystalline structure are incombustible and are separable into fibers. Asbestos includes Chrysotile, Crocidolite, Amosite, Anthophyllite, and Actinolite.

E. ACM: Any material containing more than 1% or greater by weight of asbestos of any type or mixture of types. State laws may vary in their definition of asbestos containing material.

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

G. Critical Barrier: A solid, asbestos impermeable partition erected to constitute a work area closure; the outer perimeter of an asbestos work area, usually erected across corridors or other open spaces to complete containment.


I. Enclosure: All herein specified procedures necessary to complete enclosure of all ACM behind airtight, impermeable, permanent barriers.

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

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

L. Industrial Hygienist: An industrial hygienist certified in the Commonwealth of Massachusetts to perform air monitoring.

M. Removal: All herein specified procedures necessary to strip all ACM from the designated areas and to dispose of these materials at an acceptable site.

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

O. 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.

P. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos contaminated waste.

Q. Work Area: Any area indicated on the Drawings as asbestos abatement areas or as areas containing friable asbestos material.

R. Worker Decontamination Enclosure System: A decontamination enclosure system for workers, typically consisting of a clean room, a shower room, and an equipment room.
1.06 STOP WORK

A. If the Owner or the Industrial Hygienist presents a written stop work order, immediately and automatically stop all work. Do not recommence work until authorized in writing by the Industrial Hygienist and or Designer.

1.07 CONTRACTOR’S USE OF THE EXISTING BUILDING

A. always Keep existing driveways and entrances serving the premises clear and available to the Owner and his employees. Do not use these areas for parking or storage of materials, unless authorized in writing by the Owner.

B. Smoking or open fires will not be permitted within the building enclosure or on the premises.

1.08 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. Provide a full time Site Supervisor for work under this Section with all appropriate state licenses, who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel and disposal procedures. This person is the Competent Person in accordance with 29 CFR 1926 for the Contractor and is the Contractor’s representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to ACM. This person shall have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures, have had a minimum of two years on the job training and meet all additional requirements set forth in 29 CFR 1926 for a Competent Person.

B. The Site Supervisor must be certified by the State of Massachusetts. Asbestos Contractor shall provide proof of such certification to the Industrial Hygienist not less than 10 days prior to commencing any work.

1.09 SPECIAL REPORTS

A. Except as otherwise indicated, submit special reports directly to the Industrial Hygienist within one day of occurrence requiring special report, with copies to all others affected by the occurrence.

B. When an event of unusual and significant nature occurs at the site (examples: failure of negative pressure system, rupture of temporary enclosures, unauthorized entry into work areas), prepare and submit a special report listing date and time of event, chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise the Industrial Hygienist in advance at earliest possible date.

C. Prepare and submit special reports of significant accidents, at the site and anywhere else work is in progress related to this project. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.
1.10 CONTINGENCY PLAN

A. Prepare a contingency plan for emergencies including fire, accident, power failure or any other event that may require modification of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination or work area isolation. A copy of the plan shall be submitted to and approved by the Industrial Hygienist prior to any work being done.

B. Post in the clean room of the decontamination unit and in the Contractor's office trailer telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital and police.

1.11 PERMITS AND NOTIFICATIONS

A. Secure necessary permits in conjunction with asbestos removal, hauling, and disposition and provide timely notification as may be required by federal, state, regional, and local authorities. Notify the Department of Environmental Protection (DEP) and the Massachusetts Department of Labor Standards (DLS) and provide copies of the notification to the Industrial Hygienist, Industrial Hygienist and the State Environmental Regulatory Agency 10 working days (Document Submission Date) prior to commencement of the work.

B. No later than the Document Submission Date, notify the local fire, police and Health Departments, in writing, of proposed asbestos abatement work. Advise the fire department of the nature of the asbestos abatement work, and the necessity that all firefighting personnel who may enter the work site in the case of fire wear self-contained breathing apparatus. Provide one copy of the notices to the Industrial Hygienist prior to commencing the work.

C. No later than the Document Submission Date, submit proof satisfactory to the Industrial Hygienist that all required permits, site location, and arrangements for transport and disposal of asbestos containing or contaminated materials, supplies, and the like have been obtained.

1.12 SAFETY COMPLIANCE

A. Comply with laws, ordinances, rules, and regulations of federal, state, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials.

B. Comply with the applicable requirements of the current issue of 29CFR 1926.1101 and 40CFR 61, Subparts A and B. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work.

1.13 RESPIRATOR PROGRAM

A. Establish a respirator program by ANSI Z88.2 and 29 CFR l926.1101 (h), l926.l03, and l910.l34.
1.14 PERSONNEL PROTECTION

A. Prior to commencement of work, workers shall be instructed in and shall be knowledgeable of the hazards of asbestos exposure; use and fitting of respirators; use of showers; entry and exit from work areas, and all aspects of work procedures and protective measures.

B. All asbestos abatement workers shall receive training and shall be accredited per 40 CFR 763.90(g). Training and accreditation shall be in accordance with 40 CFR 763, Appendix C to Subpart E. Training shall also be provided to meet the requirements of OSHA Regulations contained in 29 CFR 1926.

C. Prior to the start of work, the Asbestos Contractor shall provide medical examinations for all employees in accordance with 29CFR 1926.1101 (m). All employees hired by the Asbestos Contractor after start of work shall have medical examinations in accordance with this paragraph before being put to work.

D. Maintain complete and accurate records of employee's medical examinations, during employment and make records of the required medical examinations available for inspection and copying to: The Assistant Secretary of OSHA, the Director of The National Institute for Occupation Safety and Health (NIOSH), authorized representatives of either of them, and an employee's physician upon the request of the employee or former employee.

E. Provide personnel exposed to airborne concentrations of asbestos fibers with fire retardant disposable protective whole-body clothing, head coverings, gloves, and foot coverings. Provide gloves to protect hands. Make sleeves secure at the wrists and make foot coverings secure at the ankles using tape. Asbestos Contractor shall require and monitor the use of complete protective clothing. A competent person designated by the Asbestos Contractor in accordance with 29CFR 1926.1101 shall periodically examine protective clothing worn by employees in the work area for rips or tears. When rips or tears are detected, they shall be immediately mended or replaced.

F. Provide goggles to personnel engaged in asbestos operations when the use of a full-face respirator is not required.

G. Provide authorized visitors with suitable protective clothing, headgear, eye protection and footwear, whenever they are required to enter the work area, to a maximum of 3 changes for 3 visitors per day. One of the sets of protective clothing shall be available for full time use by the Industrial Hygienist.

H. Provide all persons with personally issued and marked respiratory equipment approved by NIOSH and OSHA. The appropriate respiratory protection shall be selected according to the most recent Massachusetts regulations.

I. Once all visible asbestos material has been removed during decontamination, cartridge type respirators will be allowed during the final cleanup provided the measured airborne concentrations do not exceed 0.1 fibers per cubic centimeter. Where respirators with disposable filters are employed, provide enough filters for replacement to the worker or applicable regulation.
J. If the permissible respirators fail to provide enough protection against volatile emitted by any sealant used, the services of a qualified industrial hygienist will be procured, at the Asbestos Contractor's expense, to determine proper respiratory protection. The Owner and Industrial Hygienist will not be liable for the cost of increased respiratory protection.

K. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services. All personnel wearing negative pressure respirators shall have respirator fit tests within the last six months and signed statements shall be available.

1.15 REFERENCE STANDARDS

A. Unless otherwise indicated, all referenced standards shall be the latest edition available at the time of bidding. Requirements of this Section shall in no way invalidate the minimum requirements of the referenced standards. Comply with the provisions of the following codes and standards, except as otherwise shown or specified. Where conflict among requirements or with this Section exists, the more stringent requirements shall apply.

B. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) requirements, which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

C. U.S. Environmental Protection Agency (EPA) requirements, which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

D. U.S. Department of Environmental Protection (DEP) and the Massachusetts Department of Labor Standards (DLS).

1.16 SUBMITTALS

A. No work shall commence until the Contractor submit an emailed completed submittals not less 10-working days prior to commencement of the work. The submittals shall include the following:

1. Submit all licenses and certification required.
2. Submit written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the EPA.
3. Submit all required items previously listed.
4. Secure necessary permits in conjunction with asbestos removal, hauling, and disposition and provide timely notification as may be required by federal, state, regional, and local authorities. Notify the Department of Environmental Protection (DEP) and the Massachusetts Department of Labor Standards (DLS) and provide copies of the notification.
5. Notify the local fire, police and Health Departments, in writing, of proposed asbestos abatement work. Advise the fire department of the nature of the asbestos abatement work, and the necessity that all firefighting personnel who may enter the work site in the case of fire wear self-contained breathing apparatus. Provide one copy of the notices.
6. Submit proof that all required permits, site location, and arrangements for transport and disposal of asbestos containing or contaminated materials, supplies, and the like have been obtained.
7. The Contractor shall submit a plan for managing the waste including all collection, storage, disposal and decontamination practices/waste disposal.
8. Submit medical examinations for all employees in accordance with 29CFR 1926.1101 (m). All employees hired by the Asbestos Contractor after start of work shall have medical examinations in accordance with this paragraph before being put to work.
9. Provide MSDS for all used products on this Project.
10. Submit the negative pressure system. Do not begin work until the Designer approves the submittal. Include in the submittal at a minimum:
   a. Number of negative air machines required and the calculations necessary to determine the number of machines.
   b. Description of projected airflow within the work area and methods required providing adequate airflow in all portions of the work area.
   c. Location of machines in the work area.
   d. Location of pressure differential measurement equipment.
   e. Manufacturers product data on equipment used to monitor pressure differential.
11. Submit for approval the form of security and safety log, which will be maintained on the project.
12. Submit written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the Department of Environmental Protection.
13. Submit proof that training requirements as specified in 29CFR 1926.1101 (k) (3) and by appropriate state agencies has been complied with.
14. Submit a description of the plans for construction of decontamination enclosure systems and for isolation of the work areas in compliance with this specification and all applicable regulations.
15. Submit a detailed schedule including work dates, work shift time, number of employees, dates of start and completion of all work activities (including mobilization, work area preparation, asbestos abatement, inspection and clearance monitoring, each phase of refinishing, and final inspections). Schedule shall be updated with each partial payment request.

1.17 REPORTING

A. Maintain on site a daily log documenting the dates and time of the following items, as well as other significant events:

1. Minutes of meetings: purpose, attendees, and brief discussion
2. Visitations: authorized and unauthorized
3. Personnel: by name, entering and leaving the work area
4. Special or unusual events
5. Personnel air monitoring tests and results

B. Documentation with confirmation signature of the Industrial Hygienist of the following:

1. Inspection of work area preparation prior to start of removal and daily thereafter.
2. Removal of any polyethylene barriers.
3. Removal of waste materials from work area and transport and disposal at approved site.
4. Decontamination of equipment.
5. Waste Shipment Records. No final payment will be approved until all above documents have been submitted.

C. Provide two bound copies of this log to the Industrial Hygienist with the application for final payment.
1.18 AIR MONITORING

A. Throughout the entire removal and cleaning operations, air monitoring will be conducted to ensure that the Asbestos Contractor is complying with the EPA and OSHA regulations and any applicable state and local government regulations. The Owner will provide an Industrial Hygienist (Universal Environmental Consultants) to take air samples at the job site at no cost to the Asbestos Contractor.

B. The purpose of the Industrial Hygienist’s air monitoring will be to detect faults in the work area isolation such as:
   1. Contamination of the building outside of the work area with airborne asbestos fibers,
   2. Failure of filtration or rupture in the negative pressure system,
   3. Contamination of the exterior of the building with airborne asbestos fibers.
   4. Should any of the above occur the Asbestos Contractor should immediately cease asbestos abatement activities until the fault is corrected! Work shall not recommence until authorized by the Industrial Hygienist.

C. The Industrial Hygienist will monitor airborne fiber counts in the work area. The purpose of this air monitoring will be to detect airborne fiber counts higher than the Action Level of 0.1 f/cc which may significantly challenge the ability of the work area isolation procedures to protect the balance of the building from contamination by airborne fibers.

D. The Asbestos Contractor shall be responsible for providing his/her own personnel monitoring within the work area in accordance with CFR 1926.1101.

1.19 AIRBORNE FIBER COUNTS

A. If any air sample taken outside of the work area exceeds the base line (background) conducted by UEC? Immediately and automatically stop all work. If this air sample was taken inside the building and outside of critical barriers around the work area, immediately erect new critical barriers to isolate the affected area from the balance of the building.
   1. Respiratory protection shall be worn in affected area.
   2. Leave critical barriers in place until completion of work and ensure that the operation of the negative pressure system in the work area results in a flow of air from the balance of the building into the affected area.
   3. After certification of visual inspection in the work area, remove critical barriers separating the work area from the affected area.
   4. A final inspection after removal of poly shall be completed by the Asbestos Contractor’s Supervisor and the Industrial Hygienist.

B. The following procedure shall be used to resolve any disputes regarding fiber types when work has been stopped due to excessive airborne fiber counts. "Airborne Fibers" referred to above include all fibers regardless of composition as counted in the NIOSH 7400 Procedure. If work has stopped due to high airborne fiber counts, air samples will be secured in the same area by the Industrial Hygienist for analysis by Transmission Electron microscopy (TEM). Airborne Fibers counted in samples analyzed by TEM shall be only asbestos fibers, but of any diameter and length. Subsequent to analysis by TEM the number of "Airborne Fibers" shall be determined by multiplying the number of fibers, regardless of composition, counted by the NIOSH 7400 procedure by a number equal to asbestos fibers counted divided by all fibers counted in the TEM analysis.
C. If TEM is used to arrive at the basis for determining "Airborne Fiber" counts in accordance with the above paragraph, and if the average of airborne asbestos fibers in all samples taken outside the work area exceeds the base line, then the cost of such sampling and analysis will be born by the Asbestos Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plastic Sheet: 6 mil minimum thickness, unless otherwise specified.

B. Tape: Capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water. Provide tape, which minimizes damage to surface finishes.

C. Cleaning Materials: Use materials recommended by manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

2.02 EQUIPMENT

A. Supply the required number of asbestos air filtration units to the site in accordance with these specifications.

2.03 DANGER SIGNS AND LABELS

A. Display danger signs at each location where airborne concentrations of asbestos fibers may be in excess of 0.01 fibers/cc. Post signs at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs.

B. The sign shall also contain a pictorial representation of possible danger or hazard, such as a skull and cross bone, or other suitable warning as approved by the Industrial Hygienist. Sign shall meet the requirements of 29CFR 1926.200. A sample of the signs to be used shall be submitted to the Industrial Hygienist for approval prior to beginning work area preparation.

C. Affix danger labels to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers.

2.04 PERSONNEL DECONTAMINATION UNIT

A. Prior to any asbestos abatement work, including placement of plastic on walls that will contact or disturb asbestos containing surfaces, or removal of light fixtures or any items on asbestos containing surfaces, construct a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Shower Room, and 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.
B. Build suitable framing or use existing rooms, with the Industrial Hygienist written approval, connected with framed in tunnels if necessary; line with 6 mil plastic; seal with tape at all lap joints in the plastic for all enclosures and decontamination enclosure system rooms. Decontamination units and access tunnels constructed outside shall be constructed with tops made of 5/8" plywood or approved equal. In all cases, access between contaminated and uncontaminated rooms or areas shall be through an airlock. In all cases, access between any two rooms within the decontamination enclosure systems shall be through a curtained doorway.

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

D. 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.

E. An existing room may be utilized as the changing room if it is suitably located and of a configuration whereby workmen may enter the Clean Room directly from the Shower Room. Protect all surfaces of room with sheet plastic. Authorization for this shall be obtained from the Industrial Hygienist in writing prior to start of construction.

1. always Maintain floor of changing room dry and clean. Do not allow overflow water from shower to wet floor in Changing Room.
2. Damp wipe all surfaces twice after each shift change with a disinfectant solution.
3. Provide a continuously adequate supply of disposable bath towels.
4. Provide posted information for all emergency phone numbers and procedures.
5. Provide storage locker per employee.
6. Provide all other components indicated on the Contract drawings.

F. 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.

G. 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.

1. Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.
2. Separate this room from the Clean and Equipment Rooms with airtight walls fabricated of 6-mil polyethylene.
3. Provide showerhead and controls.
4. Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.
5. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.
6. Arrange so that water from showering does not splash into the Clean or Equipment Rooms.
7. 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.
8. Provide flexible hose shower head.
9. Pump wastewater to drain and provide 20 micron and 5-micron wastewater filters in line to drain or wastewater storage. Locate filter hose inside shower unit so that water lost during filter changes is caught by shower pan and pumped to exterior filtering system.

H. Provide equipment room for contaminated area; work equipment, footwear and additional contaminated work clothing are to be left here. This is a change and transit area for workers. Separate this room from the work area by a 6-mil polyethylene flap doorway.

1. Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.
2. Separate this room from the Shower Room and work area with airtight walls fabricated of 6-mil polyethylene.

I. Separate work area from the equipment Room by polyethylene barriers. If the airborne asbestos level in the work area is expected to be high, add an intermediate cleaning space between the Equipment room and the work area. Damp wipe cleans all surfaces after each shift change.

2.05 EQUIPMENT DECONTAMINATION UNITS

A. In areas with only one access, it may be impossible to utilize a separate Equipment Decontamination Unit. In this case, all equipment and waste materials will exit through the Personnel Decontamination Chambers.

B. When two accesses to the work area are available, provide an Equipment Decontamination Unit consisting of a serial arrangement of rooms, Clean Room, Holding Room, Washroom for removal of equipment and material from work area. Do not allow personnel to enter or exit work area through Equipment Decontamination Unit.

C. Provide an enclosed shower unit located in work area just outside Washroom as an equipment, bag and container cleaning station.

D. Provide Washroom for cleaning of bagged or containered asbestos containing waste materials passed from the work area. Construct Washroom of 2 by 4-inch (minimum) wood framing and 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 flaps of 6-mil polyethylene sheeting, or rigid self-closing doors.

E. Provide Holding Room as a drop location for bagged ACM passed from the Washroom. Construct Holding Room of 2 by 4-inch (minimum) wood framing and polyethylene sheeting, at least 6-mil in thickness and located so that bagged materials cannot be passed from the Washroom through the Holding Room to the Clean Room.
F. Provide Clean Room to isolate the Holding Room from the building exterior. Construct Clean Room of 2 by 4-inch (minimum) wood framing and polyethylene sheeting, at least 6-mil in thickness and locate to provide access to the Holding Room from the building exterior. Separate this room from the exterior by flaps of 6 mil polyethylene sheeting, or rigid self-closing doors.

PART 3 - EXECUTION

3.01 SCOPE OF WORK:

It is anticipated that the asbestos abatement project will be performed in one phase. It is the asbestos contractor’s responsibility to comply with the phasing schedule prepared by the Architect and shall comply with the commencement and completion dates allocated. Changing, decreasing and increasing of phases, size, location and scope of work shall not constitute compensation by the Owner or any of his representatives.

The project monitor(s) will record on a daily basis all quantities removed. The asbestos contractor will be required to do the same. Both the contractor and the monitor must sign all daily logs. No work will continue until all logs are signed daily to the satisfaction of the Designer and Monitor. At the completion of the total project, should quantities removed were found to be less than the listed below, the asbestos contractor will be required to issue a credit to the owner based on unit prices listed at the end of this section or will be paid at the unit prices should quantities removed were found to be greater than the listed above.

<table>
<thead>
<tr>
<th>Location</th>
<th>Type of ACM</th>
<th>Approximate Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooring Materials</td>
<td></td>
<td>8,200 SF</td>
</tr>
<tr>
<td>Gypsum Walls and Joint Compound</td>
<td></td>
<td>13,500 SF</td>
</tr>
<tr>
<td>Sinks</td>
<td></td>
<td>4 Total</td>
</tr>
<tr>
<td>Interior Doors</td>
<td></td>
<td>19 Total</td>
</tr>
<tr>
<td>Pipe and Hard Joint Insulation</td>
<td></td>
<td>150 LF</td>
</tr>
<tr>
<td>Hidden Pipe and Hard Joint Insulation</td>
<td></td>
<td>200 LF</td>
</tr>
<tr>
<td>Ceiling/Walls Demolition to Access ACM</td>
<td></td>
<td>1,500 SF</td>
</tr>
</tbody>
</table>

Specific Notes:
1. It’s the Asbestos Contractor’s responsibility to inspect the site and confirm condition prior to the submission of his/her bid package. It is also the Asbestos Contractor’s responsibility to review the demolition drawings, notes and phasing configurations.
2. All quantities are approximate. It’s the Asbestos Contractor’s responsibility to inspect the site and confirm condition and quantities prior to the submission of his/her bid package. It is also the Asbestos Contractor’s responsibility to review the demolition drawings, notes and phasing configurations. The contractor must include in his/her bid the entire scope of work listed above. The Contractor must agree and accept all unit prices listed at the end of this section. Means and methods of removal will be at the discretion of the contractor with prior approval by the onsite monitor and designer.
3. In all areas where ACM pipe and hard joint insulation has to be removed, ACM debris is included in the scope of work and has to be removed and disposed of as ACM at no extra cost to the Owner.
4. Remove and dispose as ACM of all ACM pipe and hard joint insulation found and ACM that might be found in concealed and hidden locations including all ACM debris that might be found.
5. Remove and dispose as ACM of all types of flooring materials listed above, including but not limited to vinyl floor tiles, carpet, resilient baseboard, stair treads, transition strips, leveling compound and mastic under all above items. The Contractor will be required to disconnect services (gas, water,
etc.) and remove and dispose of fixed objects to access to ACM. Multiple layers of flooring material are found. Should ACM found underneath objects not previously removed, the asbestos contractor will be required to perform abatement at no additional cost to the owner for re-mobilization. The majority of plywood shall remain in place, therefore, where plywood exist, mastic shall remain in place. Refer to drawings.

6. The Contractor shall make spot demolition in all walls/ceilings to uncover hidden ACM that may be found prior to the GC demolition activities. The asbestos contractor shall perform needed demolition at no additional cost to the owner to remove all ACM (Walls and Ceilings Demolition).

7. Remove and properly dispose of interior doors with windows including but not limited to windows, doors, glass, glass blocks, caulking and all attachments.

8. Remove and dispose as ACM of the Damproofing applied on sinks.

9. Remove and dispose as ACM of gypsum walls, sheetrock and joint compound and all related attachment including insulation that might be found. Remove and dispose of all mounted fixtures.

10. Remove and properly dispose of all light fixtures. Tubes were assumed to contain mercury (Light Fixtures). The asbestos contractor shall retain the services of a licensed electrician to disconnect the lights. Refer to drawings for scope.

3.02 JOB CONDITIONS

A. Do not commence asbestos abatement work until:
   1. Arrangements have been made for disposal of waste at an acceptable site. Submittal shall be made no later than the Document Submission Date.
   2. Arrangements have been made for containing and disposal of wastewater resulting from wet stripping or filtering through a 5-micron filter.

B. All materials resulting from abatement work, except as specified otherwise shall become the property of the Asbestos Contractor and shall be disposed of as specified herein.

C. Pre-clean all areas prior to commencement of any work.

D. Clean all routes used to transport waste.

3.03 INSPECTION AND PREPARATION

A. Examine the areas and conditions under which asbestos will be abated and notify the Industrial Hygienist in writing of conditions detrimental to the proper and timely completion of the work.

B. Before any work commences, post danger signs in and around the Work Area to comply with 29CFR 1926.1101 (k) (l) per federal and state regulations.

3.04 WORK PROCEDURE

A. Perform asbestos related work in accordance with 29CFR 1926.1101 and as specified herein. Use wet removal procedures. Personnel shall wear and utilize protective clothing and equipment as specified herein. Personnel of other trades not engaged in the removal and demolition of asbestos shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection provisions of this specification are complied with by the trade personnel. Provide and post, in the Equipment Room and the Clean Room, the decontamination and work procedures to be followed by workers, as described hereinafter.
B. Each worker and authorized visitor shall, upon entering the job site, remove street clothes in the Clean Change Room and put on a respirator and clean protective clothing before entering the equipment room or the work area. All workers shall remove gross contamination before leaving the work area. All clothing such as coveralls, head covers, boots shall be removed and properly disposed of before leaving equipment room. With the exception of bathing suites and respirators, the workers shall proceed to the Shower Room. Under the shower, respirators shall be removed and cleaned. Cleaned respirators shall be placed in suitable clean plastic bags and carried by employees to Clean Room. Soap, towels shall be furnished by the Asbestos Contractor. The Asbestos Contractor shall maintain proper sanitary conditions. The Asbestos Contractor's designated competent person shall ensure that these practices are being adhered to.

C. Following showering and drying off, each worker and authorized visitor shall dispose of towels as contaminated waste and proceed directly to the Clean Change Room and dress in clean clothes at the end of each day's work, or before eating, smoking, or drinking. Before re-entering the work area from the Clean Change Room, each worker and authorized visitor shall put on the applicable respirator and shall dress in clean protective clothing. Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste.

D. Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or double bag for use at next site.

E. Workers removing waste containers from the Equipment Decontamination Enclosure shall enter the holding area from outside wearing a respirator and dressed in clean coveralls. No worker shall use this system to leave or enter the washroom or the work area.

F. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos containing or contaminated materials and until final cleanup is completed. This includes the removal of any equipment in contact with ACM such as lights, HVAC grills and other related structures.

3.05 PREPARATION OF THE WORK AREA

A. Seal off the work area by sealing large openings such as open doors, elevator doors, and passageways with a critical barrier. The critical barrier shall constitute the outermost boundary of the asbestos abatement project work area. Plastic sheeting on open framing is not a suitable critical barrier. Critical barriers may be erected of a suitable solid construction material such as plywood, sheetrock, gypsum board, or other related materials.

B. Prior to any asbestos abatement work, clean the proposed work areas using HEPA filtered vacuum equipment and wet cleaning methods as appropriate. Methods that raise dust, such as dry seeping or vacuuming with equipment not equipped with HEPA filters will not be permitted. Dispose of all cloths, which are used for cleaning as contaminated waste.

C. Place all tools, scaffolding and staging necessary for the work in the area to be isolated prior to erection of plastic sheeting temporary enclosure.
D. Shut down electric power. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements. Provide 24-volt safety lighting and provide ground-fault interrupter circuits as power source for lights and electrical equipment.

E. Seal off all openings, including but not limited to corridors, doorways, windows, skylights, ducts, grills, diffusers, and any other penetrations of the work areas, with 6-mil plastic sheeting and sealed with tape.

F. Prior to any abatement activities seal all floor and ceiling openings or penetrations that have not already been sealed. This includes penetrations through ceiling and floor slabs, both empty holes and holes accommodating items such as cables, pipes, ducts, conduit and expansion joints in floors and wall and floor slab assemblies.

G. Use combination fire stop foam and fire stop sealant equivalent to Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant. Material shall be applied in accordance with manufacturer's recommendations.

H. Maintain emergency and fire exits from the work areas, or establish alternative exits satisfactory to the local fire officials. Coordinate work with local fire and police departments, and Industrial Hygienist.

I. Shut down and isolate heating, cooling, ventilating air systems in the contaminated areas to prevent contamination and fiber dispersal to other areas of the structure. During the work, seal vents within the work area with solid barriers, such as plywood and tape and plastic sheeting, or as indicated on the drawings.

J. Remove all HVAC system filters. Pack disposable filters in sealable double 6 mil plastic bags for burial in the approved waste disposal site; replace with new filters after final cleanup. Wet clean permanent filters; reinstall after final cleanup.

K. Before work is begun, clean all items, which can be removed without disrupting the asbestos material. Pre-clean movable furniture, [carpeting, clocks, speakers, books, and other objects] within the proposed areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate; remove such objects from work areas to a temporary location.

L. Pre-clean non-removable furniture, book shelving, equipment, heat fans, fire alarms, pipes, ductwork, wires and conduits, lockers, skylights, speakers, and other fixed objects within the proposed work areas, using HEPA filtered vacuum equipment and wet cleaning methods as appropriate prior to abatement activities, and enclose with minimum 6 mil plastic sheeting sealed with tape.

M. Remove and clean all ceiling mounted objects, such as lights, HVAC grills and other items not previously sealed off, that interfere with asbestos abatement. Use localized water spraying or HEPA filtered vacuum equipment during fixture removal to reduce fiber dispersal.

N. The Asbestos Contractor will be required to supply a certified plumber to be available should any questions or problems arise.
3.06 MAINTENANCE OF ENCLOSURE SYSTEMS

A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period.

B. Use smoke methods to test effectiveness of barriers when directed by the Industrial Hygienist.

3.07 CONTROL ACCESS

A. Permit access to the work area only through the Decontamination Unit. All other means of access shall be closed off, warning signs displayed on the clean side of the sealed access.

B. Large openings such as open doorways and passageways shall be sealed as a critical barrier. The critical barrier shall constitute the outmost boundary of the asbestos abatement work area.

C. Plastic sheeting on open framing is not a suitable critical barrier. All cracks, seams, and openings in critical barriers shall be caulked or otherwise sealed, to prevent the movement of asbestos fibers out.

3.08 ISOLATION OF WORK AREA

A. Separate the work area from other portions of the building and the outside by sheet plastic barriers at least 6 mil in thickness.

B. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the work area with duct tape alone or with polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work including work area decontamination is completed. All lighting fixtures shall have had power shut off.

C. Provide sheet plastic barriers at least 6-mil in thickness needed to complete seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape.

3.09 COVERING OF FLOOR AND WALL SURFACES

A. Clean all contaminated furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning prior to being moved or covered. All equipment, furniture, stored items in work area is to be deemed contaminated unless specifically declared as uncontaminated on the Drawings or in writing by the Industrial Hygienist. Clean all surfaces in work area with a HEPA filtered vacuum of by wet wiping prior to the installation of any sheet plastic.

B. Cover floor of work area with 2 individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, turned up walls at least 12 inches. Form sharp right angle-bend at junction of floor and wall so that there is no radius, which could be stepped on causing the wall attachment to be pulled loose. Duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.
C. Remove all general construction items such as cabinets, casework, doors and window trim, moldings, ceilings and trim which cover the surface of the work to prevent interference with the work. Clean, decontaminate and reinstall, unless otherwise indicated, all such materials, upon completion of all removal work with materials, finishes, and workmanship to match existing installations before start of work.

D. Cover all walls in work area with two (2) layers of polyethylene sheeting, at least 6-mil in thickness, mechanically supported and sealed with duct tape. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated on the Contract documents or in writing by the Industrial Hygienist. There shall be no seams in the plastic sheet at wall to floor joints.

E. If the enclosure barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the work area, enclose it and decontaminate it.

3.10 NEGATIVE PRESSURE

A. Establish negative pressure in the work area by installation of High Efficiency Particulate Air (HEPA) filter air-purifying devices. Comply with ANSI Z9.2, Local Exhaust Ventilation Requirements. Maintain system in operation 24 hours per day until decontamination of the work area is completed and area has been certified clean by air monitoring tests and visual inspections. Discharge of asbestos fibers to the outside of the building will not be permitted.

B. Size negative air pressure system(s) to provide a minimum of one air change every 15 minutes for the area under negative pressure. Locate the exhaust unit(s) so that makeup air enters the work area primarily through the decontamination unit and traverses the work area as much as possible. The intent is to provide the air change specified in each work area (room), not just the specified negative pressure. Place the end of the unit or its exhaust duct through an opening in the plastic barrier or wall covering. Seal the plastic around the unit or duct with tape.

C. The system shall maintain an air pressure differential of minus 0.02 inch of water. Test the negative pressure system prior to any abatement actions to ensure that the 0.02-inch differential is present. The Industrial Hygienist may require the use of ventilation smoke tubes to check the system performance.

3.11 REMOVAL OF ASBESTOS CONTAINING MATERIALS

A. Thoroughly wet ACM to be removed prior to stripping to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal Encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for water or removal Encapsulant to penetrate material thoroughly. If a removal Encapsulant is used, apply in strict accordance with manufacturer's written instructions.

B. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.
C. Remove saturated ACM in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into disposal bags. Twist neck of bags bend over and seal with minimum three wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit.

D. For the removal of pipe and joint insulation, the density of asbestos containing pipe covering seldom allows the material to be removed in a completely wet state. However, every attempt should be made to keep the insulation material as wet as possible to prevent release of asbestos fibers.

E. Cut the cloth covering on the pipe insulation along the top seam to allow wetting of the asbestos insulation. Do not allow the pipe insulation to fall to the ground or adjacent surfaces. Wet the insulation material and immediately place in a double 6 mil, minimum thickness labeled plastic bag.

F. In certain areas, asbestos pipe insulation will be removed with glove-bags (with prior approval by the Industrial Hygienist).
   1. Seal all critical barriers.
   2. Pre-clean if necessary and place one layer of polyethylene under the pipe to be removed.
   3. Negative air machines with HEPA filtration will be used in the area.
   4. Glove bags will be smoke tested.
   5. 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.
   6. Place one strip of duct tape along the edge of the open top slit of glove-bag for reinforcement.
   7. 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.
   8. Place additional layers of tape along the top of the glove-bag to seal the staple holes and to securely support the bag on the pipe.
   9. Fill each bag with 2 inches of water to thoroughly wet the removed insulation.
  10. Attach vacuum hose through port in bag and tape tightly to prevent leakage.
  11. Insert spray nozzle into bag and tape tightly to prevent leakage.
  12. One person places his hands into the long-sleeved gloves while the second person directs garden sprayer at the work.
  13. 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.
  14. Remove insulation using putty knives or other tools. Place pieces in bottom of bag without dropping.
  15. Using nylon scrub brush, rags, and water scrub and wipe down the exposed pipe.
  16. Wipe down the inside of the bag with the rags. Remove the water nozzle and tape shut.
  17. Encapsulate the exposed ends and cover any exposed ends of pipe insulation with the re-wettable clothe. This shall be done prior to removing the bag.
  18. Place the cleaned tools either into the next glove bag or put into the glove and pulled out. Twist the glove, tape at least twice and cut through the tape. The tools can be dropped into a bucket of water to clean them.
  19. Twist the bag several times and turn on HEPA vacuum to remove the air. Tape the twist several times.
20. Slip a 6-mil disposal bag under the glove-bag and while running the vacuum sufficiently to collapse the bag, cut the glove-bag off.
21. Encapsulate all exposed pipe and elbows to lock down any remaining fibers.
22. Remove disposable suits and place these into bag with waste.
23. Collapse the disposal bag with a HEPA vacuum, twist top of bag, seal with at least 3 wraps of duct tape, bend over and seal again with at least 3 wraps of duct tape.

3.12 DECONTAMINATION OF WORK AREA

A. Maintain premises and public properties free from accumulation of waste, debris, and rubbish, caused by operations. Remove visible accumulations of asbestos material and debris. Wet clean all surfaces within the work area.

B. Remove the plastic sheets from walls and floors only. Take proper care in folding up plastic sheeting to minimize dispersal of residual asbestos containing debris.

C. Leave the windows, doors, and HVAC vents sealed. Maintain HEPA filtered negative air pressure systems, air filtration and decontamination enclosure systems in service.

D. Remove all debris from floor of work area. This includes all trash, scraps of lumber, pipes and all visible asbestos debris. The asbestos debris is primarily deteriorated pipe insulation that has fallen to the ground. Dispose of all debris removed as asbestos contaminated waste. HEPA vacuum the entire floor.

E. Clean all surfaces in the work area and any other contaminated areas with water and with HEPA filtered vacuum equipment. After cleaning the work area, wait 24 hours to allow for settlement of dust, and again wet clean and clean with HEPA filtered vacuum equipment all surfaces in the work area. After completion of the second cleaning operation, perform a complete visual inspection of the work area to ensure that the work area is free of visible asbestos debris. The negative pressure system may be shut down only after clean air has been achieved.

F. Include sealed drums and all equipment used in the work area in the cleanup and remove from work areas, via the equipment decontamination enclosure system, at an appropriate time in the clean sequence.

G. Conduct cleaning and disposal operations to comply with applicable ordinances and antipollution laws. Do not burn or bury rubbish and waste materials on job site. Do not dispose of volatile wastes in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

H. Store volatile wastes in covered metal containers during work hours and remove from premises at end of workday. Prevent accumulation of wastes, which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.

I. If the Industrial Hygienist, within 24 hours after the second cleaning, finds visible accumulations of asbestos debris in the work area, repeat the wet cleaning until the work area complies, at no additional expense to the Owner.

J. Remove the first layer of plastic sheet from walls and floors only. Take proper care in folding up plastic sheeting to minimize dispersal of residual asbestos containing debris.
K. Leave the windows, doors, and HVAC vents sealed. Maintain HEPA filtered negative air pressure systems, air filtration and decontamination enclosure systems in service.

L. Following the final visual inspection by the IH, after the removal of asbestos-containing materials and decontamination of work areas, and while space enclosures systems remain in place, seal all surfaces from which asbestos-containing material have been removed to assure immobilization of any remaining fibers. Use a colored sealant so that complete coverage may be ensured by a visible inspection by the IH to verify that asbestos-containing material has been adequately removed. Apply sealer in accordance with manufacturer's recommendations using airless spray equipment.

M. Clearance air samples will be taken by the IH using aggressive air sampling. Analysis will be made using Phase Contrast Microscopy or Transmission Electron Microscopy.

N. Clean all access routes used to transport ACM.

3.13 WORK AREA CLEARANCE

A. The work is complete when the work area is visually clean and airborne fiber levels have been reduced to the level specified below. When this has occurred, the Asbestos Contractor will notify the Industrial Hygienist that the area is ready for clearance.

B. The number and volume of air samples taken, and analytical methods used by the Industrial Hygienist will be in accordance with applicable regulations.

C. The Owner will pay for the initial testing required for clearance. Should the initial testing fail, the Contractor will reimburse the Owner for the cost of all additional testing based on $90.00 per hour for project monitor, $30.00 per each PCM.

3.14 DISPOSAL OF ACM AND ASBESTOS CONTAMINATED WASTE

A. To prevent exceeding available storage capacity on site, remove sealed and labeled containers of asbestos waste and dispose of such containers at an authorized disposal site in accordance with the requirements of disposal authority.

B. Comply with 29 CFR l926.1101.

C. Seal all asbestos and asbestos contaminated waste material with double thickness 6-mil, sealable plastic bags. Label the bags; transport and dispose of all in accordance with the applicable OSHA and EPA regulations. At the conclusion of the job, place all polyethylene material, tape, cleaning material and clothing in the plastic lined drum. Seal, correctly label, and dispose of as asbestos waste material.

D. Transport the bags to the approved waste disposal site. Asbestos Contractor shall obtain trip tickets at the landfill to document disposal of asbestos containing materials. A form shall be signed, not initialed, by all parties. Copies of all trip tickets shall be submitted to the Industrial Hygienist.
E. If a rental vehicle is used to transport asbestos waste, Asbestos Contractor shall provide to the vehicle’s owner a written statement as to the intended use of the vehicle. A copy of such notice, signed by the vehicle owner, shall be provided to the Industrial Hygienist prior to transporting materials in the vehicle. Two layers of 6-mil plastic sheet shall be placed on the floor and walls of the rental vehicle prior to loading any containers of asbestos waste.

F. Consider wastewater from showers and sinks to be contaminated waste and dispose of in accordance with this Section, unless water has been filtered through a 5-micron filter.

3.15 DISPOSAL OF NON-CONTAMINATED WASTE:

A. Remove from the site all non-contaminated debris and rubbish resulting from demolition operations. Transport materials removed from demolished areas and dispose of off site in a legal manner.

B. During progress of work, clean site and public properties, and dispose of waste materials, debris, and rubbish. Provide on-site containers for collection of waste materials, debris, and rubbish. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off Owner’s property.

3.16 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

A. After asbestos abatement work and decontamination is complete, relocate objects moved to temporary locations in the course of the work to their former positions. Re-secure mounted objects removed in the course of the work in their former positions and assure that they are in working order.

3.17 FINAL CLEAN UP

A. Employ experienced workers or professional cleaners for final cleaning. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from exposed to view interior and exterior finished surfaces. Polish surfaces so designated.

3.18 UNIT PRICES

A. It’s the Asbestos Contractor’s responsibility to inspect the site and confirm condition and quantities prior to the submission of his/her bid package. It is also the Asbestos Contractor’s responsibility to review the demolition drawings, notes and phasing configurations.

B. The contractor must include in his/her bid the entire scope of work listed in 3.01. The Contractor must agree and accept all unit prices listed below. Means and methods of removal will be at the discretion of the contractor with prior approval by the onsite monitor and designer.

C. Units prices listed below are inclusive of all related costs.

<table>
<thead>
<tr>
<th>Description</th>
<th>Addition</th>
<th>Deduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Flooring</td>
<td>$ 4.50 per SF</td>
<td>$ 4.00 per SF</td>
</tr>
<tr>
<td>2. Pipe and Hard Joint Insulation</td>
<td>$ 25.00 per LF</td>
<td>$ 20.00 per LF</td>
</tr>
<tr>
<td>3. Ceiling and Wall Demolition</td>
<td>$ 1.00 per SF</td>
<td>$ 0.75 per SF</td>
</tr>
<tr>
<td>4. Gypsum, sheetrock</td>
<td>$ 4.00 per SF</td>
<td>$ 3.50 per SF</td>
</tr>
</tbody>
</table>
END OF SECTION
PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Wood blocking and nailers.
2. Incidental wood framing as may be required to construct the Work of this Project.
3. Installation of related weather barriers.
4. Installation of new plywood underlayment

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
1. Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS
2. Section 02 41 00 - SELECTIVE DEMOLITION
3. Section 06 20 00 - FINISH CARPENTRY
4. Section 07 30 00 – ASPHALT ROOF SHINGLES
5. Section 08 10 00 – DOORS AND FRAMES
6. Section 08 53 13 - VINYL WINDOWS
7. Section 09 21 16 - GYPSUM BOARD ASSEMBLIES

1.3 REFERENCE STANDARDS

A. U. S. Department of Commerce Product Standards:
1. DOC PS 1, "Construction and Industrial Plywood."
2. DOC PS 2, "Performance Standard for Wood-Based Structural Use Panels."

B. American Plywood Association Standards:
2. APA E30, "Residential and Commercial."
3. APA Underlayment, APA C-C Plugged Ext, APA rated STURD-I-FLOOR.

C. Inspection Agencies, Abbreviations used:
   1. SPIB - Southern Pine Inspection Bureau.
   2. WWPA - Western Wood Products Association.
   3. WCLIB - West Coast Lumber Inspection Bureau.

D. American Wood Preservers Association:
   1. AWPA C9: Plywood - Preservative Treatment by Pressure Process.
   2. AWPA C20: Structural Lumber - Fire-Retardant Treatment by Pressure Process.
   4. AWPA M4: Standard for the Care of Preservative Treated Wood Products.

E. Weather Barrier:
   1. American Architectural Manufacturers Association (AAMA):
      a. AAMA 711 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.
   2. American Association of Textile Chemists and Colorists (AATCC):
   3. ASTM International:
      d. ASTM D3330 - Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape.
      e. ASTM D3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
      g. ASTM E283 - Standard Test Methods of Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.

B. Material certificates for dimensional lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use as well as design values approved by the Board of Review of American Lumber Standards Committee.

C. Research reports or evaluation reports required under Quality Assurance.

D. Product Data: Submit manufacturer's printed product data, specifications, standard details, installation instructions, use limitations and recommendations for each material used. Provide certifications that materials and systems comply with specified requirements. Product data for the following products:
1. Engineered wood products.
2. Metal anchors for wood framing.
3. Construction adhesives.

E. Shop Drawings: Provide large scale shop drawings for fabrication, installation and erection of all parts of the work. Provide plans, elevations, and details of anchorages, connections and accessory items. Provide installation templates for work installed by others. Show all interfaces and relationships to work of other trades. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components. Connectors shall be selected by the Contractor and submitted to the Architect for approval.
   1. Show details full size.
   2. Show locations and sizes of blocking and nailers, including concealed blocking and reinforcing specified in other Sections.

F. Field Measurements: Take field measurements before preparation of shop drawings and fabrication. Do not delay progress of the job. If field measurements are not possible prior to fabrication, allow for field cutting and fitting.

G. Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

B. Lumber Standard: Furnish lumber manufactured to comply with PS 20 and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

C. Lumber Grading and Control Marks: Provide lumber with each piece factory-marked with grade stamp of applicable inspection agency evidencing compliance with grading rule requirements and identifying grading agency, species, stress grade level, moisture content at time of surfacing, and mill.
   1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; or omit grade stamps entirely and provide certificates of grade compliance issued by inspection agency.

D. Construction Panel Standards: Comply with PS 1 for plywood construction panels and, for products not manufactured under PS 1 provisions, with APA PRP-108.
   1. Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.
E. **Plywood Underlayment:** Comply with APA Plywood Underlayment Standards; Minimum Plywood Performance category 11/32.

1. Furnish construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

F. **Fire-Retardant Treated Wood:** Treat according to specified AWPA standards. Obtain each type of fire-retardant chemical from one source, and each type of treated wood product from one source. Mark each piece with appropriate classification marking of Underwriter's Laboratories, U.S. Testing, Timber Products Inspection, Inc., or other qualified testing and inspecting agency acceptable to authorities having jurisdiction.

G. **Pressure-Preservative Treated Wood:** Treat according to specified AWPA standards. Mark each treated item with the AWPB (American Wood Preservers Bureau) or SPIC (Southern Pine Inspection Bureau) Quality Mark.

H. **Model Code Evaluation/Research Reports:** Where model code evaluation/research reports are required by authorities having jurisdiction as evidence of compliance with the building code in effect for this Project, provide products for which such evaluation reports exist. Reports may be required for the following items:

1. Metal framing anchors.
2. Powder driven fasteners.
3. Fire-retardant-treated wood.

I. **Installer Qualifications:** Arrange for rough carpentry work including framing by a firm that can demonstrate successful experience for rough carpentry and framing of projects similar in type and quality to those required for this Project.

I. Jasteners shall comply with ESR 1539/NER-272.

1.6. **COORDINATION**

A. Work under this section shall be properly coordinated with the work of other sections to assure the steady progress of all the work of the Contract.

B. Coordinate sizes and locations of framing, blocking, reinforcements, and other related units of Work specified in other Sections to ensure that exterior architectural woodwork can be supported and installed as indicated.

1.7 **DELIVERY, STORAGE, AND HANDLING**

A. Materials when delivered to site shall be stacked and stored above the ground under protective coverings or indoors in such manner as to insure proper drainage, ventilation, and protection. No kiln dried materials shall be placed in
the building until concrete and masonry work have been completed, and are sufficiently dry.

B. Rough carpentry materials shall be stored on elevated piles to allow for air circulation below and tipped in one direction to effectively drain moisture. Lumber shall be wrapped completely, including bottoms, in waterproof tarps. Tarps shall be tied down to protect against wind blow-off.

C. Should delays in Project be anticipated, lumber shall be stored in covered storage trailers.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Obtain and comply with wood manufacturer's and installer's coordinated advice for optimum temperature and humidity conditions for wood during its storage.

B. Weather Limitations: Proceed with installation of exterior woodwork only when existing and forecasted weather conditions will permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

C. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Verify locations of concealed framing, blocking, and reinforcements that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
   2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 – PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber shall be of sound stock, new, straight, of consistent size, free of stains and mildew, and kiln dried to a moisture content of not more than 19%, by weight. Where exposed or semi-exposed, wood members shall be selected for best possible appearance from the grade of stock specified.
1. Lumber shall be surfaced four sides (S4S) and shall bear the grade and trademark of the association under whose rules it is produced, and a mark of mill identification.

2. Lumber shall be furnished in longest practical lengths with respect to each intended use, and single length pieces shall be used wherever possible.

B. Plywood shall conform to the requirements of APA Design/Construction Guide, Residential and Commercial, and be Structural 1 rated sheathing.

C. Structural Members: Refer to the Drawings for the following items:
   1. Structural wood framing.

D. Pressure Preservative Treated Lumber for Above Ground Use: Pressure preservative treat lumber above ground and in contact with masonry, metal and concrete in conformance with AWPA C2. Provide pressure preservative treated lumber with a minimum net retention of 0.25 pcf. Dry lumber to maximum moisture content of 19% after treatment. Use only waterborne preservatives which conform to AWPA P5. Creosote preservatives are not acceptable.
   1. Pressure preservative treat lumber in contact with ground in compliance with AWPA C2 with a minimum net retention of 0.40 pcf. Treatment shall be ACQ or approved substitute.

E. Fire-Retardant Treated Plywood for Exterior Use: Where indicated, provide plywood sheathing UL fire-retardant treated with treatment which yields a flame spread of not more than 25 when tested in conformance with ASTM E 84, conforms to AWPA C 27 for Exterior Type, and has successfully passed a rain test conforming to ASTM D 2898. Kiln dry after treatment to a maximum moisture content of 15%.

F. General Carpentry Material Schedule shall be as follows:
<table>
<thead>
<tr>
<th>Item</th>
<th>Grade/Rating</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber 2&quot; nominal thickness or greater</td>
<td>No. 2 Structural or Better</td>
<td>Spruce-Hemlock-Fir</td>
</tr>
<tr>
<td>Lumber less than 2&quot; nominal thickness</td>
<td>No. 2 Common</td>
<td>Spruce-Hemlock-Fir</td>
</tr>
<tr>
<td>Plywood Sheathing</td>
<td>APA Rated sheathing Exposure 1, APA C-D plugged, exterior glue</td>
<td>Group 1 Species</td>
</tr>
<tr>
<td>Plywood Underlayment</td>
<td>APA Underlayment; APA C-C Plugged Ext.</td>
<td>Group 1 Species</td>
</tr>
<tr>
<td>Treated Wood</td>
<td>ACQ 0.025 or 0.40 pcf Pressure Treated, SPC Select and No. 1 Grade, kiln-dried following treatment</td>
<td>Southern Pine</td>
</tr>
</tbody>
</table>

G. Fire Retardant Treated Lumber for Interior Use: Where indicated, provide lumber located at interior of building fire retardant treated in conformance with AWPA C20, Type A. Provide fire retardant treatment which, yields a flame spread rating of not more than 25 when tested in accordance with ASTM E 84 kiln dried after treatment to maximum moisture content of 19%.
H. Adhesive for glued construction shall conform to APA Performance Specification AFG-01.

I. Plywood Sheathing
1. ½” nominal plywood shall conform to U.S. Product Standard PS 1-95 and shall carry the grade trademark of The Engineered Wood Association - APA. Only APA BC EXT or APA AC EXT grades are acceptable.
2. Plywood Grading: Comply with Product Standard PS 1, "Construction and Industrial Plywood".
3. Certification and Marking: The producer shall include a Certificate of Inspection with each shipment. Grade mark each panel in compliance with applicable standards of Product Standard PS 1.
4. Moisture Content: Provide plywood which has been seasoned by kiln drying to a moisture content not to exceed 19%.

J. Plywood Underlayment
1. Minimum Plywood Performance Category:
   a. Over smooth subfloor: ¾
   b. Over lumber subfloor or uneven surfaces: 11/32

2. Fastener size and type:
   a. 3d x 1-1/4- in . ring or screw-shank nails min. 12-1/2 gage (0.099 in.) shank dia.

3. Maximum Fastener Spacing:
   a. ¾ Performance category:
      i. 3” o.c. along panel edges
      ii. 6” each way within the panel field
   b. 11/32 Performance category:
      i. 6” o.c. along panel edges
      ii. 8 “ each way within panel field

4. In areas to be finished with resilient floor coverings such as tile or sheet vinyl, or with fully adhered carpet, specify Underlayment, C-C Plugged or veneer-faced STURD-1-FLOOR with "sanded face." Underlayment A- C, Underlayment B-C, Marine EXT or sanded plywood grades marked "Plugged Crossbands Under Face," "Plugged Crossbands (or Core)," "Plugged Inner Plies" or "Meets Underlayment Requirements" may also be used under resilient floor coverings.

2.2 INSTALLATION MATERIALS

A. Blocking, Shims, and Nailers: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
B. Screws: Select material, type, size, and finish required for each use, nonferrous metal or hot-dip galvanized, unless otherwise indicated. Comply with ASME B18.6.1 for applicable requirements.

C. Fasteners: Select material, type, size, and finish required for each use. Comply with Fed. Spec. FF-N-105 for applicable requirements.
   1. All fasteners which penetrate the aluminum flashing shall be aluminum or stainless steel.
   2. Finish on Metal Connectors and Anchors:
      a. Metal connectors in contact with treated lumber materials in an exterior wet environment shall be hot dipped galvanized per ASTM A 653 total both sides. Minimum coating for galvanizing shall be 1.85 oz. zinc per sq. ft. equal to Simpson Strong-Tie ‘ZMAX’ (G185).
      b. Products that are 14 ga. and thicker shall be hot dipped galvanized per ASTM A 123 total both sides. Minimum coating for galvanizing shall be 2.0 oz. zinc per sq. ft. equal to Simpson Strong-Tie ‘Hot Dip Galvanized HDG.
      c. Fasteners to be used with these products shall meet specifications of ASTM A 153.

D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts, unless otherwise indicated. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.5 ROUGH HARDWARE

A. Provide all rough hardware required to complete this work and to attach this work in a secure and rigid manner to work of this and other trades, including all inserts, anchors, anchor bolts, lag bolts, screws, washers, nuts, nails, and other rough hardware. Assist other trades as necessary in the placement of inserts and anchor bolts in concrete and masonry and furnish full instructions regarding locations, sizes, and other requirements of the items in order that they may properly prepare their work to receive same. Rough hardware shall comply in all respects with requirements of the governing laws and codes.

B. Unless otherwise called out, wood framing, nailers, furring, etc., less than 2 in. nominal thickness shall be secured to back-up material by use of appropriate fasteners located 4 in. from ends and spaced not greater than 16 in. on center along lengths of the members. Type and length of fastening devices shall be such as to develop positive and secure anchorage to the back-up material.
2.6 METAL FLASHINGS

A. Aluminum: Provide ASTM B 209, alloy 3003, temper H14 aluminum for aluminum flashing, and related work, where indicated on Drawings.

B. Finish shall be two-coat 70% Kynar 500 or Hylar 5000 (PVDF).
   1. Where flashings are visible, color shall be as selected by the Architect.
   2. Where flashings are not visible, medium bronze finish.
   3. No uncoated aluminum flashing will be permitted.

C. Unless otherwise indicated, provide the following minimum thicknesses:
   1. Miscellaneous Flashing: 0.040 in. (unless otherwise noted).

2.8 WEATHER BARRIERS

A. Acceptable Manufacturers:
   a. Kingspan GreenGuard Raindrop 3D Building Wrap
   b. Tyvek Commercial Wrap
   c. Typar Drainable Wrap

Basis of Design:
Kingspan Insulation LLC
2100 RiverEdge Pkwy. Suite 175
Atlanta, GA 30328
Toll Free Tel: 800-241-4402
Tel: 678-589-7300
Fax: 678-589-7325
Email: request info (suzanne.diaz@kingspan.com)
Web: www.kingspaninsulation.us

B. Product:
A. Mechanically-fastened drainage membrane air barrier, building wrap:
   Provide Kingspan GreenGuard RainDrop 3D Building Wrap or approved equivalent to meet the following:
B. Comply with the following:
   a. ICC-ES AC38.
   b. ASTM D226, Type I Building / Roofing Paper.
   c. ASTM E1677, Type II, Air Infiltration Barriers.
   d. ASTM E2178, Air Permeance, Air Barriers.
   e. ASTM E2357, Air Barrier Assembly.
   f. ASTM E2556 - Type II, Specification for Water-Resistive Barriers.
C. Nominal Thickness: 0.020 inch (20 mils) when tested in accordance with ASTM D1777.
D. Air Leakage Rate: 0.01 cubic feet per minute per square foot at 1.57 psf when tested in accordance with ASTM E283.
E. Air Permeance: Not to exceed 0.001 cubic feet per minute per square foot under a pressure differential of 0.3 inch water (1.57 psf) (0.000 L/sm at 75
Pa) when tested in accordance with ASTM E2178.

F. Water Vapor Permeance: 16 Desiccant, 18 Water Method when tested according to ASTM E96.

G. Water Vapor Transmission Rate: 111 Desiccant, 125 Water Method grams per square meter per 24 hours when tested in accordance with ASTM E96.

H. Water Penetration Resistance: Less than 600 when tested in accordance with AATCC 127.

I. Water Resistance: 120 minutes when tested to ASTM D779, and pass ASTM E331 for 15 minutes at 15 miles per hour (27 Pa).

J. Minimum Drainage Efficiency: 90 percent when tested in accordance with ICC-ES AC356.

K. Structural Integrity: Pass ASTM E330, Procedure A, minimum 1 hour at 65 miles per hour (500 Pa).

L. Comply with ICC-ES AC38.

M. Comply with ASTM E2273 and EIFS manufacturer requirements.

N. Comply with CCMC Technical Guides 07102 and 07273.

C. ACCESSORIES


2. Standard Flashing: Kingspan GreenGuard, self-adhering membrane for sealing straight openings. Comply with the following:
   a. AAMA 711.
   b. ICC-ES AC148.
   c. Nominal Thickness: 0.020 inch (20 mils).
   e. Adhesive: Rubber-modified asphalt.
   f. Maximum UV Exposure: 30 days.

3. Butyl Flashing: Kingspan GreenGuard Butyl Flashing, SuperStretch type at arched windows, corners, and round protrusions. Comply with the following:
   a. AAMA 711.
   b. ICC-ES AC148.
   c. Nominal Thickness: 0.016 inch (16 mils).
   e. Self-Adhering.
   f. Water Resistance: Minimum 24 in 24 hours when tested in accordance with ASTM D779.
   g. Peel Adhesion: 1.9 to 4.4 based on substrate when tested in accordance with ASTM D3330.
   h. Maximum UV Exposure: 120 days.

4. Sill Sealer: GreenGuard Sill Sealer, plastic foam gasket material.

5. Tape: Kingspan GreenGuard Custom Seam Tape.

6. Mechanical Attachment: Non-corrosive type with minimum spacing as recommended by the manufacturer based on weather barrier products and substrates.
PART 3 – EXECUTION

3.1 INSTALLATION - GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Fastening: Securely attach rough carpentry work to substrate by anchoring and fastening as indicated.
   1. Fastening of rough carpentry work shall conform to requirements of the governing laws and codes.
   2. Where nailing is indicated, use common wire nails, unless otherwise indicated. Countersink nail heads on exposed carpentry work and fill holes.
   3. Select fasteners of size that will not penetrate members where opposite side is exposed or will receive finish materials.
   4. Install fasteners without splitting wood; predrill as required. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
   5. Wood shall be secured to wood substrates and other wood to wood connection with nails spaced 12 in. on center maximum staggered along the centerline of the member being installed. All nail heads must be flush with the top surface.
   6. Nailing of plywood sheathing shall be in strict accordance with the published specifications and recommendations of the APA - The Engineered Wood Association (f/k/a American Plywood Association).

E. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

F. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Edges of solid-wood (lumber) members 3/4 inch thick or less: 1/16 inch.
   2. Edges of rails and similar members more than 3/4 inch thick: 1/8 inch.

G. Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to maximum extent possible. Disassemble
components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

H. Shop-cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and seal edges with a water-resistant coating suitable for exterior applications.

3.2 ROUGH CARPENTRY WORK

A. No attempt is made in this Specification to list the various elements of rough carpentry work, as the major part of the work to be done is clearly shown on or reasonably inferred from the Drawings. The rough carpentry work required shall include all such work, regardless of whether or not each and every item is specifically called for. Refer to Drawings to determine the major extent of the rough carpentry work required.

B. The Contractor shall be responsible for structural integrity, connections, and anchorage of all rough carpentry work.

C. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned, or too small to fabricate with minimum number of joint or optimum jointing arrangements, or which are of defective quality with respect to surfaces or sizes.

D. Refer to FM Data Sheet 1-49 concerning spacing requirements for perimeter blocking anchorage. All anchors and fasteners that attach wood blocking to the structure shall have their spacing halved for an 8 ft. length away from all exterior corners of the perimeter.

E. Butt joints in wood shall be flush to provide a smooth, uniform line with no irregularities.

F. Built-up blocking shall have butt joints staggered 4 in. minimum layer to layer. The minimum length of any individual piece of woodwork shall be 12 in. All lengths of woodwork shall have a minimum of four fasteners.

G. Construct all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction, all in a first class workmanlike manner. Counter-bore for bolt heads, nuts, and washers where required to avoid interference with other materials.

H. Structural members shall be full-length without splices, and spaced not farther than 16 in. on center, except as may be otherwise specifically indicated on the Drawings.
I. Wood framing members shall be one-piece full length for maximum strength. Wood blockings, edgings, nailers, etc., shall be installed as indicated or specified and shall be furnished in not less than 12 ft. lengths, except where shorter lengths are required.

J. Wood blockings, nailers, edgings, etc., shall be installed as indicated or specified and shall be furnished in lengths not less than 12 ft., except where shorter lengths are required.
   1. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
   2. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

K. Install all wood grounds required at gypsum wallboard work, including those required by other trades to properly attach their work, such as grounds to assure proper lines and levels and for attachment of fixtures, louvers, grilles, registers, diffusers, etc. Do not, however, include fixture support blockings at steel stud framed or furred gypsum wallboard finished walls or partitions as work of this Section.

L. If nailing, drilling, or powder-driving into concrete or masonry causes puncturing of conduits, pipes, ducts, etc., embedded in such work, repair all damage so caused.

M. Miscellaneous Items: Install all rough carpentry work and other miscellaneous items throughout, as indicated on the Drawings and as required to satisfactorily complete the entire work, whether or not each and every required piece is specifically indicated on the Drawings.

3.3 UNDERLAYMENT

A. Always protect plywood Underlayment against physical damage or water prior to application. Panels should, however, be allowed to equalize to atmospheric conditions by standing individual panels on edge for several days before installation.

B. Install plywood Underlayment, smooth side up, immediately before laying the finish floor. For maximum stiffness, place face grain across supports. Edge joints of underlayment panels should be offset by at least 2 inches from joints of subfloor panels. Underlayment end joints should be offset from subfloor end joints by at least one joist spacing, and Underlayment encl joints should be offset from floor joists by 2 inches, so that nails miss the framing (to minimize the chance of nail pops).

C. Begin fastening at one edge next to a preceding panel. Assuring that the panel is uniformly flat, continue by fully fastening toward opposite edge. If power-driven fasteners are used, foot pressure should be applied near the fastener to ensure
firm contact between the Underlayment and subfloor. Make sure fasteners are flush with, or just slightly below, surface of Underlayment just prior to installation of resilient floor coverings such as tile, or sheet vinyl. (See Table 17 for Underlayment recommendations for thin flooring products.) Fill and thoroughly sand edge joints. (This step may not be necessary under some carpet and structural flooring products-check recommendations of flooring manufacturer) Fill any other damaged or open areas, such as splits, and sand all surface roughness. (Ensure fill compound is fully cured before sanding because it may continue to expand as it cures.)

D. The plywood Underlayment needed to bridge an uneven floor will depend on roughness and loads applied. Although a minimum 11/32 Performance Category is recommended, 1/4 Performance Category plywood Underlayment may also be acceptable over smooth subfloors, especially in remodeling work.

E. Where floors may be subject to temporary moisture, use panels with exterior glue (Exposure 1) or APA C-C PLUGGED Exterior. APA C-D PLUGGED is not an adequate substitute for Underlayment grade since it does not have equivalent face veneer puncture resistance.

3.3 WEATHER BARRIER

A. Install in accordance with manufacturer’s instructions in configurations and locations shown on the Drawings. Coordinate final installation details and sequencing with the drawings and adjacent product manufacturers requirements, including sheathing or insulation board, framing members, flashing, sealants and tapes, door and window manufacturer standard details and warranty requirements.

B. Unroll with printed side facing out. Align bottom edge of wrap with the base of the wall. Install weather barriers continuously over building surfaces with sheets overlapped as follows: top and bottom, side to side, and at through-wall flashing as follows:
   1. Top and bottom, side to side, and at through-wall flashing: minimum 6 inches.
   2. Corners: minimum 12 inches.
   3. Sill Plates: minimum at least 2 inches.

C. Seal seams, edges, and attachment to adjacent construction using manufacturers recommended tapes and sealants to prevent air leakage including penetrations, ties and anchors, windows, doors, and other openings, exterior assembly connections, control and expansion joints, and miscellaneous openings in the building envelope.

D. Penetrations and Openings:
   1. Install continuously over openings, make a cut in the center of each
opening wrapping inside the rough opening, securing to framing members unless otherwise indicated.

2. Seal perimeters of penetrations and openings with manufacturer’s butyl flashing or approved equal.

E. Sill Sealer Installation:
   1. Unroll flush with the exterior wall surface.
   2. Butt end and perpendicular joints tightly, do not overlap.
   3. Impale to fit over anchor bolts.
   4. Install sill plate and anchor securely.

F. Install mechanical fasteners in minimum spacing recommended by the manufacturer.
   1. Do not install mechanical fasteners on exterior surfaces adjacent to openings as follows:
      a. Opening Sides: within 6 inches.
      b. Opening Heads: within 9 inches.
   2. Attach at sills and completely seal with manufacturer's recommended sealants and flashing.

3.4 COMPLETION

A. Just prior to completion of work of this Section, inspect work in the company of Architect and make adjustments and corrections to work leaving operating parts in perfect operating condition, all jointing to adjacent material tight, all surfaces without blemishes or stains, all work properly executed and complete, and all defects and damaged work replaced or corrected.

3.5 CLEAN UP

A. As work progresses, and at the end of each day's work, remove scraps of wood, loose fasteners, and other debris; sweep clean; and leave the work area safe and free of debris such as screws and nails that may damage other Work in place.

END OF SECTION