APPENDIX A

HAZARDOUS MATERIAL SPECIFICATIONS
ABATEMENT RENOVATION

East Side Union High School District
Independence High School- Building J

Division #3 of #3

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SECTION 010100

HAZARDOUS MATERIAL SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. **Project Background**:

A pre-renovation survey and a limited exploratory survey of suspect regulated building components associated with asbestos, lead and other regulated materials related, was completed for the Independence HS, Building J renovation as follows.

ASBESTOS

Per analytical data, the following items have been found to contain asbestos concentrations above 1%, and is considered an Asbestos-Containing Material (ACM, >1% asbestos content):

a. Independence HS:Building J

Independence High School Building J Summary of ACM					
Material Description (Homogeneous Area)	**Material Location**	**% Asbestos**	**Quantity of Material**	**EPA/NESHAP Category**	**OSHA Class**
**Drywall /Joint compound (#4)	Walls, Ceilings, Columns, excluding East Wing and Entry's	0.25-<0.25%	14,100 sf	Cat. I NF	II
White with Gray resilient floor tile & mastic	Work Area, Restroom in Lounge	2-8%	960 sf	Cat. I NF	II
Texture Coating (#5)	Walls, Ceilings, Columns, excluding East Wing and Entry's	0.5-<0.25%	14,100 sf	I	II
Joint compound (Older) (#10)	Entry Walls and Ceilings	<0.25%	3560 sf	Cat. I NF	II
Joint compound (Older) (#16)	Work Area, Custodians Rm., Lounge, Electrical	<0.25%	4650 sf	Cat. I NF	II

	Room and Receiving Rm				
Sink Undercoat Material (#18)	Receiving Room, Work Area	0.4-<.25%	8 sf	I	**
Connection Tape/Paper	Roof on HVAC seams	3%	160 sf	II	II
Roofing Felt	Roof under metal sheet roof	30%	7,200 sf	Cat. I NF	II
Wood Seam Caulking	Roof-On Perimeter Walls	3%	80 sf	II	II
Wood Seam Caulking	Roof-On Perimeter Walls	3%	80 sf	II	II
Texture Coating (#35)	Work Area, Custodians Rm., Lounge, Electrical Room and Receiving Rm	0.25-<.25%	4650 sf	I	II
NA[2] due to composite result of DW/JC.					
[1] Quantity is an estimate with variation possible at +/- 15%. Exact quantity should be verified by contractor in the field.					

LEAD

According to analytical data, the items identified below resulted in "detectable" concentrations of lead above the laboratory reporting limit (Lead Containing Paint (LCP) < 5000 ppm, Lead-Based Paint (LBP) ≥ 5000 ppm):

a. **Independence HS: Building J**

Kitchen/FS				
Material Description	Material Location	Results		Designation
		XRF Reading (mg/cm^2)	Bulk Sample (ppm)	
Beige Metal Ladder	Work Area	6.6	N/A	LBP
Orange Countertops	Work Area	.6, .8	N/A	LBP
Beige Ceramic Tile	Men/Women's Restroom	2.1, 1.7	N/A	LBP
Green Ceramic Tile	Men/Women's Restroom	2.1	N/A	LBP
Notes:				

1: LBP = Lead based paint, defined as any paint coating or building material which contains 1mg/cm2 or greater lead.
2: LCP = Lead containing paint, defined as any paint coating or building material which contains any detectable concentration of lead.

For detailed information regarding the results of the lead survey, refer to the full Pre-Demolition Roof Survey Report with Addendum Report, which lists the full results for those less than the detectable concentration of lead per the laboratory. It is important to understand that Cal/OSHA does not give a regulatory definition of a "lead-containing material." Cal/OSHA and Federal OSHA are concerned with "an employee occupationally exposed to lead." This is understood to mean material disturbed during construction work containing lead in any amount (i.e., lead-containing paint and lead-based paint) is covered under the lead in construction standard. Additionally, Federal OSHA has determined that the uses of XRF data and/or bulk sampling data (e.g., paint chips) are not acceptable for predicting employee exposures to lead. This fact means that contractors cannot use XRF data, paint chip data or bulk sample data as a surrogate for employee exposures during construction work (or the bidding process) as defined in 8 CCR 1532.1(a).

OTHER REGULATED MATERIALS (ORMs)

According to visual observations, the HVAC units are summarized below:

Building J		
ORM	**Quantity**	**Location**
Fluorescent light tube	775	Throughout
Fluorescent light tube Ballasts	355	Throughout
Mercury Thermostats	5	Throughout
Battery Operated Exit Signs	7	Throughout
HVAC Unit	5	Roof
Motors with Fluid	2	Custodian Room, Roof

The work under this specification involves the disturbance and/or removal, handling, transportation or disposal of asbestos containing materials (ACM), asbestos-containing construction materials (ACCM), lead-containing construction materials, elemental lead components, and related regulated components (including but not limited to HVAC units, oils, refrigerants). This specification is meant to be performance based but provides guidelines for the Contractor.

The Contractor shall be responsible for reviewing all specifications, drawings, addenda, hazardous materials reports (to which this document is an appendix) or other information to determine the impact of construction activities on designated or suspect hazardous containing building materials. Such hazards shall include, but may not be limited to asbestos containing materials (ACM), lead-containing paint (LCP), or other non-specified materials.

The contractor shall refer to this Section 010100, the Pre-Renovation Hazardous Materials Survey Report (available) and associated addenda reports, Hazardous Material Plans and the Project Manual for details on materials, locations and work requirements.

Should the Contractor suspect, encounter or have knowledge of any hazards not listed or described in the contract documents, the Contractor shall be responsible for informing the Owner via the Construction Manager and the Observation Service for the Owner (Owner's Representative), immediately and prior to disturbing or causing any action which could result in a release of any suspected or confirmed hazardous material.

The Contractor shall be solely responsible for determining quantities that are actually impacted or may be impacted during the renovation or demolition activities described in the contract documents.

It is the responsibility of the Contractor to be knowledgeable of all federal, state or local regulations and requirements and comply with the most stringent portions of those regulations and requirements.

B. **Statement of Work**: Hazardous Materials Removal Sub-Contractor (Contractor) shall furnish all labor, materials, services, permits, waste packaging, waste disposal, insurance (specifically covering the handling and transportation of Asbestos-Containing Material, Asbestos-Containing Construction Material, Asbestos-Containing Waste Material, Lead Containing Waste Materials, Lead Containing Hazardous Waste, HVAC oils, refrigerants, and (associated regulated materials), and equipment which is specified, shown, or reasonably implied for the following activities :

a) In accordance with the technical requirements contained within **Section 028200** of these specifications, remove and dispose of all **asbestos containing material(s)** and **asbestos containing construction material(s)** which are known to be present. Quantities and locations of asbestos containing materials may be found in Tables above.

b) In accordance with the technical requirements contained within **Section 028300** of these specifications, Contractor shall provide Title 8 Lead-Related Construction Compliance, Title 17 Accreditation, Certification, and Work Practices for Lead-Based Paint and Lead Hazards, and the EPA RRP (Renovate, Repair, and Paint) regulation, and DTSC/DOT regulations associated with the demolition, packaging and recycling or disposal of all **lead containing material(s),** or build back onto lead-containing materials, which are known to be present. Quantities and locations of lead containing materials may be found in Tables above.

c) In accordance with the technical requirements contained within **Section 028400** of these specifications, remove and dispose of all **Other Regulated material(s)** which are known to be present in the following locations with the following estimated quantities and locations of Other Regulated Materials may be found in Tables above.

1.2 WORK NOT INCLUDED IN THE CONTRACT DOCUMENTS

A. Removal and disposal of interior finishes, electrical, plumbing, fire, interior HVAC and mechanical systems - except for those systems which the contractor deems it necessary to perform the scope identified above.

1.3 PROJECT DOCUMENTS

A. Existing conditions are reflected correctly to the best of Owner's knowledge. Should minor conditions be encountered which are not exactly as indicated, modification to new work shall be made as required at no additional expense to Owner.

B. Results of tests of asbestos and lead-containing materials taken from building materials within the scope of this Project are described in the Pre-Renovation Hazardous Material Report and Addendum Report (available). However, contractor is cautioned that, should interpretations be made, opinions formed, and conclusions be drawn as a result of examining the test results, those interpretations, opinions, and conclusions will be those made, formed, and drawn solely by contractor.

C. Owner and Observation Service make no representation, warranty, or guaranty that the conditions indicated by the test reports either are representative of those conditions existing throughout the area, or that unforeseen developments may not occur, or that materials other than, or in proportions different from those indicated may not exist.

D. Contractor is advised that the locations of all hazardous materials may not be clearly known and that he shall proceed with caution in all phases of the Work. Additional hazardous materials may be uncovered during the course of the Work or during supplementary assessment activities undertaken by the Observation Service at the start of demolition work. If any additional hazardous materials are discovered during the course of the work, the contractor shall avoid disturbance and notify the Owner to undergo assessment and direction.

E. Contractor shall obtain, review and familiarize itself with the following project documents prior to preparing bid documents, mobilizing and performing Work:

1. Pre-Renovation Hazardous Material Survey Report
2. Addendum Report

1.4 PHASING

A. Contractor may be requested to provide access to the building for other trades throughout the duration of the project. Contractor shall coordinate all scheduling and activities with the owner and/or general contractor.

B. The contractor may phase each work task (removal of discrete material as described in these Contract Documents) in any manner it deems reasonable and appropriate. However, contractor may not phase its work such that waste streams are commingled. Further, the contractor may not use processes, introduce agents, materials or otherwise cause a waste to be more toxic by its actions.

1.5 STORAGE

A. Coordinate with the owner.

1.6 BUILDING OCCUPANCY AND ACCESS RESTRICTIONS

A. General Contractor or other sub-contractors may enter portions of the facility during the abatement operations. Coordinate work with the owner and conduct activities so as to communicate access restrictions.

1.7 WORKING DAYS AND HOURS

A. All work shall be performed from: Commence activities TBD
Complete all activities not later TBD
Contractor may work TBD

B. Hazardous material abatement work will be performed from: TBD

C. Hazardous material -free work will be allowed TBD
D. Obtain approval from General Contractor prior to altering work schedule.

1.8 PARKING

A. Contractor shall comply with Owner parking regulations.

1.9 BUILDING SECURITY

A. Maintain personnel on the site at all times when any portion of the work area(s), is open or not properly secured including at hazardous waste transport vehicle. Secure work areas completely at the end of each working day.

1.10 SEGREGATION OF WORK AREAS

A. Coordinate with General Contractor

1.11 PRE-JOB DAMAGE SURVEY OF FACILITY

A. Not applicable.

1.12 CORRECTION OF DAMAGE TO PROPERTY

A. Consider any damage to property not considered in the pre-job damage survey as having resulted from execution of this contract and correct at no additional expense to owner.

1.13 OBSERVATIONS

A. Observation Service will observe the status and progress of the Work for completeness and general compliance with the requirements of the Contract Documents.

B. In coordination with the construction manager or Client representative, the Observation Service will provide recommendations for addressing environmental issues associated with Scope (items included) and Technical Work Practices. However, the Observation Service will not issue Change Orders or otherwise provide authorization to proceed on Work outside of these Contract Documents.

1.14 SIGN-IN/OUT LOG

A. All Contractor personnel and Project Site visitors shall Sign-In/Out with the Observation Service on a daily basis for the duration of the project.

1.16 UTILITIES

A. Contractor may temporarily connect to existing permanent utilities during execution of the Work. The cost of water and power consumed will be paid by Owner. Contractor shall provide, at its own cost, supplementary power and emergency power as specified in Section 028200 Asbestos Abatement and Section 028300 Lead Construction.

B. In the event that site power is not available, the Contractor shall provide generator(s) and distribution equipment sufficient to perform the work.

C. Contractor shall provide all lighting necessary to execute the work.

1.17 SALVAGEABLE MATERIALS

A. Consider all hazardous material free materials and contaminated items demolished or removed in the execution of the Work unsalvageable unless specifically noted otherwise in the Specifications or Drawings. Contractor to have salvage rights to all materials and equipment removed as part of these Contract Documents.

1.18 FUTURE WORK

A. Coordinate and schedule the Work of these Contract Documents in a manner that will expedite the transition to future work by others under separate Contracts.

1.19 HVAC AND ELECTRICAL SYSTEM

A. Shut down execution or improper execution does not relieve the Contractor of his responsibility to protect his employees, the public and others performing services on the Project from injury or electrical hazards. The Contractor shall be responsible for performing testing, inspecting and the taking of other precautions to insure the safety of the Project.

1.20 GENERAL CONTRACTOR RULES

A. The Contractor shall abide by all facility security rules and regulations.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 028200

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies the methods, procedures, and requirements related to the removal and disposal of Asbestos-Containing Material (ACM), Asbestos-Containing Construction Material (ACCM) and Asbestos-Containing Waste Material including, but not limited to:

1. Regulatory requirements
2. Submittals
3. Personal protective measures
4. Execution
5. Inspections
6. Waste handling

B. Related Section:

1. Section 010100 – Hazardous Material Summary of Work
2. Section 028300 – Lead-Related Construction
3. Section 028400 – Other Regulated Materials
4. Hazardous Material Drawings (attached to end of specfications package)
5. Project Manual: Plans and Specifications

1.2 SCOPE OF WORK

A. The Work of this section includes the provision for all labor, materials, equipment and services necessary to effect the preparation, removal, cleaning, and disposal of asbestos, ACM, and ACCM as indicated by the contract drawings and within Section 02010 of this specification.

B. The Work of the Contract can be summarized as follows:

1. Section 010100, Section 1.1 Paragraph A and B;
2. Administrative Requirements necessary to execute the Work, including but not limited to: Preparation and delivery of all required submittals;

3. Packaging, transportation and disposal (including all prescribed, implied or otherwise required waste characterization and analysis) of all hazardous and non-hazardous materials and components shown, specified or otherwise implied.

1.3 SUBMITTALS

A. Personnel training: at the Pre-construction Meeting, Contractor shall submit (1) declaration certifying that all the Contractor's employees have been adequately trained, and (2) a photocopy of training certificates, for each employee from their respective training agency or organization. Contractor may submit a photocopy of the employee's Asbestos Worker Certification card in lieu of training certificates.

B. Respirators: submit at Pre-construction Meeting manufacturer's certification that the respirators to be used in this Project comply with government agency requirements. Contractor's certifications for each employee must clearly state that each employee has been fit tested and properly trained for respirators.

C. Medical examinations: submit proof that all persons providing labor and/or professional services who will be entering contaminated areas have had current (less than one year prior to the date of their participation on the Project) medical examinations. Furnish physician's Written Opinion to the Owner's representative at the Pre-construction Meeting, or prior to each person's commencing work on this Project, and for each person subsequently providing labor and/or professional services at the job site for whom a certificate was not initially furnished

D. Product submittals and substitutions: comply with pertinent provisions of applicable sections.

E. Abatement product data: within ten (10) days after contractor has received the owner's notice of award, submit manufacturer's catalogue, samples, Safety Data Sheets, (SDS) and other items needed to demonstrate fully the quality of the proposed abatement materials. Under no circumstances shall proposed materials be used before written approval from the owner, owner's representative or observation service. Submittals are required if the following materials are proposed (not necessarily a complete list). Do not submit data on products not proposed for this project:

1. Encapsulant

2. Surfactant

3. Protective packaging

4. Lagging adhesive

5. Glovebags

6. Solvents

F. Permits: submit at pre-construction meeting proof satisfactory to the owner, owner's representative or observation service that all required permits have been obtained.

G. Waste compliance plan: submit ten (10) days before starting work a copy of the waste compliance plan which is in compliance with federal, state, and local hazardous waste regulations and addresses:

1. Identification of hazardous waste streams, if any, associated with the work.

2. Sampling and analysis plan: should the contractor conduct additional waste characterization for disposal purposes, a plan detailing the following elements is required to be submitted and approved:

    - Identification of material(s): location, component, color, substrate;

    - Proposed sample collection methods to be employed;

    - Asbestos containing waste materials may not be commingled or composited prior to sampling;

    - Proposed analytical methods to be used;

    - Proposed analytical laboratory and associated qualifications and;

    - Proposed methods of data interpretation.

3. Estimated quantities of wastes to be generated and disposed of.

4. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24 hour point of contact. Furnish two (2) copies of EPA, state, and local permit applications, permits, and EPA Identification numbers.

5. Names and qualifications (experience and training) of personnel who will be working on-site with asbestos wastes.

6. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

7. Spill prevention, containment, and cleanup contingency measures to be implemented.

8. Name of the EPA approved hazardous waste treatment or disposal facility for asbestos disposal.

9. Waste streams, excluding asbestos containing materials, may be segregated or commingled prior to waste characterization at the contractor's discretion. It may be to the contractor's benefit to segregate unique components known or suspected to contain elevated levels of lead.

    - Waste transportation: submit in the waste compliance plan the method of transport of hazardous waste, including the name, address, EPA ID number, and telephone number of the transporter(s).

    - Whenever possible, asbestos containing waste material shall be segregated from other waste streams.

H. The designated owner's representative shall inspect the waste and sign the uniform hazardous waste manifests and/or shipping record prior to transport and disposal. The designated owner's

representative is the **ONLY** person authorized to sign the manifest and shall retain the original last copy of the manifest. A copy of the Land Ban Restriction notification or any required pertinent documentation must also be submitted in order to verify proper disposal.

I. Asbestos plan: the contractor shall submit for approval at least ten (10) days prior to the start of work a detailed plan of the work procedures to be used in the removal, repair, clean-up or encapsulation of materials containing asbestos. Such a plan shall include:

1. Location of asbestos work areas.

2. Layout and construction details of decontamination and enclosure systems.

3. Project schedule including important milestones, critical paths and interface of trades involved in the work.

4. Personal air monitoring procedures.

5. Detailed description of the method to be employed in order to prevent the spread of contamination, including negative air equipment calculations for all negative pressure enclosures.

6. Names of superintendent, foremen, project manager and other key personnel, and their day time and emergency telephone numbers.

7. Security plan including sketches necessary to clearly describe the plan.

8. Emergency evacuation plan for injured workers, fire and other emergencies. Include a list of emergency phone numbers and a route map to the nearest medical facility for emergency treatment.

9. A contingency plan, in the event of a major contamination incident caused by fire (on or off the floor being abated), a large breech in the work area containment barrier, the opening of stairwell doors, breakage of the buildings exterior windows or sabotage.

10. Negative exposure assessment(s) (NEA): the contractor shall provide any NEA to be used along with all air sampling data including the actual lab results from the laboratory and the chain of custody or air sampling form the contractor used to record the air sampling information.

11. The observation service and owner must approve the asbestos plan in writing at least 5 work days before the start of any work.

J. Equipment certification: submit at pre-construction meeting manufacturers' certification that vacuums, negative air pressure equipment filters, and other local exhaust ventilation equipment conform to ANSI Z9.2.

K. Rental equipment: when rental equipment is to be used in removal areas or to transport waste materials, a copy of the written notification provided to the rental company informing them of the nature of use of the rented equipment shall be signed by the rental company and submitted to the observation service at the pre-construction meeting.

L. Notifications: contact the following government agencies in writing by certified/registered mail or overnight mail service, postmarked or delivered at least ten (10) workdays prior to commencing any disturbance of asbestos:

1. Bay Area Air Quality Management District

2. California Division of Occupational Safety and Health

All notifications shall contain as a minimum the following information:

a) Name, address and telephone number of the owner including the contact person.

b) Name, address, EPA numbers, license number and telephone number of the contractor including the contact person.

c) Name, address and description of the building, including size, age, and prior use of building.

d) The type and quantity of friable asbestos material involved and the description of the work.

e) Scheduled starting and completion dates for abatement work.

f) Procedures that shall be employed to comply with the regulations.

g) The name, address, EPA number and telephone number of the transporter.

h) The name and address of the hazardous waste disposal facility where the asbestos waste shall be deposited.

M. Provide proof of contractor's C-22 license and asbestos certification from the Contractor State Licensing Board, and proof of registration with the Division of Occupational Safety and Health in accordance with California Labor Code, Section 6501. Submit proof with bid.

N. Respiratory protection program: submit a copy of the contractor's written respiratory protection program.

O. Safety Programs: On company letterhead, submit confirmation that Contractor has written safety programs for Injury Illness Prevention (mandatory for all projects), Hazard Communication (mandatory for all projects), Fall Protection (when applicable), Lock Out Tag Out (when applicable), and Confined Space (when applicable).

P. Encapsulant manufacturer's certification (when required) that the contractor is an approved applicator of the encapsulants to be used on this project

Q. Scaffolding: Submit to the owner's representative or observation service prior to removal work, certification from a licensed civil or structural engineer that the scaffolding design and installation is safe and adequate for the purpose for which it will be used. Submit copy of scaffolding permit when required by local regulatory agencies.

1.4 APPLICABLE REGULATIONS AND PUBLICATIONS

The publications listed below form a part of these Specifications to the extent referenced. The publications are referred to in the text by the basic designation only.

A. Federal Regulators and Regulations
   1. EPA - Environmental Protection Agency
      a) 40 CFR, Part 763, Subpart E – AHERA
   2. OSHA - Occupational Safety and Health Administration
      a) 29 CFR 1926.1101 - Asbestos Construction Standard
      b) 29 CFR 1910.1001 – Asbestos General Industry Standard
      c) 29 CFR 1926 – Construction Industry Standards
   3. NESHAPS - National Emission Standards for Hazards Air Pollutants
      a) 40 CFR 61, Subpart M - Asbestos Emissions
      b) 40 CFR 61, Subpart A - General Conditions
   4. DOT - Department of Transportation
      a) 49 CFR 270-273

B. State Regulators and Regulations
   1. Cal/OSHA - California Department of Occupational Safety and Health
      a) Title 8 CCR Section 1529 - Construction Asbestos Standard
      b) Title 8 CCR Section 3203 - Injury and Illness Prevention
      c) Title 8 CCR Section 5144 – Respiratory Protection
      d) Title 8 CCR Section 5157 - Confined Space
      e) Title 8 CCR Section 5194 - Hazard Communication
      f) Title 8 CCR Section 5208 - General Industry Asbestos Standard
      g) Title 8 CCR Chapter 4 Subchapter 4 – Construction Safety Orders
   2. DTSC - Department of Toxic Substance Control
      a) Title 22 CCR Sections 66261.24, 66268.7, 66268.114
   3. CIWMB - California Integrated Waste Management Board
   4. SWQCB - State Water Quality Control Board CCR, Title 23
   5. CSLB - Contractor State Licensing Board
      a) Business and Professional Code Section 7058.5

C. Local Regulators and Regulations
   1. BAAQMD – Bay Area Air Quality Management District
      a) Regulation 11, Rule 2

D. National Reference Standards
   1. ANSI – American National Standards Institute
      a) Z9.2 – Fundamentals Governing The Design and Operation of Local Exhaust Systems
      b) Z88.2 – Practices for Respiratory Protection
   2. NIOSH – National Institute of Occupational Safety and Health
      a) Method 7400 – Asbestos and Other Fibers
      b) Method 7402 – Asbestos Fibers by TEM
   3. UL – Underwriters Laboratories
      a) 586 – Standard for High Efficiency, Particulate, Air Filter Units

1.5 DEFINITIONS

A. **Owner**: East Side Union High School District

B. **Abatement**: Procedures to control fiber release from Asbestos-Containing building materials. Includes removal, encapsulation, and enclosure.

C. **Adequately Wet**: A term as defined in 40 CFR Part 61, Subpart M-, and EPA 340/1-90-019- that means to sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from ACM, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.

D. **Air Lock:** A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area.

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

F. **Air Sampling Professional:** The professional contracted or employed to supervise air monitoring and analysis schemes. This individual is also responsible for recognition of technical deficiencies in worker protection equipment and procedures during both planning and on-site phases of an abatement project. Acceptable air sampling professionals include industrial hygienists, environmental engineers and environmental scientists with equivalent experience in asbestos air monitoring and worker protection.

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

H. **Area Monitoring**: Sampling of airborne fiber concentrations within the asbestos work area and outside the asbestos work area which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone.

I. **Asbestos:** (29 CFR 1926.1101 Definitions) Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered.

J. **Asbestos** (California Code of Regulations definitions): Means fibrous forms of various hydrated minerals including chrysotile, (fibrous serpentine), crocidolite (fibrous riebeckite), amosite (fibrous cummintonite-grunerite), fibrous tremolite, fibrous actinolite, and fibrous anthophyllite.

K. **Asbestos-Containing Material** (ACM) EPA definition: Material composed of asbestos of any type in an amount greater than 1 percent and by weight, either alone or mixed with other fibrous or nonfibrous materials.

L. **Asbestos-Containing Construction Material** (California definition): Means any manufactured construction material, which contains more than 1/10th of 1% asbestos by weight.

M. **Asbestos-Containing Waste Material**: Any waste that contains or has been contaminated by commercial asbestos and is generated by a plant, source, or operation including, but not limited to, asbestos mill tailings, control device asbestos waste, RACM demolition and renovation waste material, disposable equipment and clothing, and bags or containers that previously contained commercial asbestos.

N. **Authorized Visitor:** The owner's project team members, the owner's representative, observation service and any representative of a regulatory or other agency having jurisdiction over the project.

O. **Clean Room:** An uncontaminated area or room which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.

P. **Contained Work Area**: A work area which has been isolated, plasticized, and equipped with a decontamination enclosure system.

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

R. **Decontamination Enclosure System**: A series of connected rooms, with air locks or curtained doorways between any two adjacent rooms, for the decontamination of workers and of materials and equipment. A decontamination enclosure system always contains at least one air lock to the work area.

S. **Encapsulant**: A liquid material which can be applied to asbestos-containing material and which controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

T. **Encapsulation**: All herein-specified procedures necessary to apply an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.

U. **Enclosure**: All herein-specified procedures necessary to enclose completely asbestos-containing material behind airtight, impermeable, permanent barriers.

V. **Excursion Limit:** An exposure of airborne concentrations of asbestos fibers of one fiber per cubic centimeter of air (1f/cc) as averaged over a sampling period of thirty (30) minutes.

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

X. **Equipment Decontamination Enclosure:** That portion of a decontamination enclosure system designed for controlled transfer of materials, waste containers and equipment, typically consisting of a washroom and a waste loadout.

Y. **Friable Asbestos Material** (40 CFR, Subpart M Definition)**:** Material that contains more than one percent (1%) Asbestos by weight and that can be broken, crumbled, pulverized, or reduced to powder by hand pressure when dry.

Z. **Fixed Object**: A unit of equipment or furniture or other building component that cannot be detached from the building or can only be detached by destructive methods resulting in irreparable damage to the item.

AA. **Glovebag Method:** A method with limited applications for removing friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in an isolated (non-contained) work area. The glovebag (typically constructed of six [6] mil transparent plastic) has two inward-projecting long sleeve rubber gloves, one inward-projecting waterwand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or area to be decontaminated and contains all asbestos fibers released during the removal process. All workers who are permitted to use the glovebag method must be highly trained, experienced, and skilled in this method.

BB. **HEPA Filter**: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of all monodispersed particles (asbestos fibers) equal to or greater than 0.3 microns in mass median aerodynamic equivalent diameter.

CC. **HEPA Vacuum Equipment:** Vacuuming equipment with a HEPA filter system.

DD. **Maximum Acceptable Level:** An exposure of airborne concentrations of fibers of 0.05 fibers per cubic centimeter of air at any time. This level is a contractual standard for this Project.

EE. **Moveable Object:** A unit of equipment, furniture or other building component that is detached or can be detached from the building without destructive methods or results.

FF. **Negative Air Pressure Equipment:** A portable local exhaust system equipped with HEPA filtration and capable of maintaining a constant, low velocity air flow into contaminated areas from adjacent uncontaminated areas.

GG. **Nonfriable Asbestos-Containing Material:** Material that contains more than one (1) percent Asbestos by weight in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the Asbestos is well bound and will not release fibers during any appropriate end-use, handling, demolition, storage, transportation, processing, or disposal.

HH. **Observation Service:** The agent of the owner or the owner's representative who shall observe the work, perform tests, verify that abatement methods and procedures specified by the contract documents are being complied with, and reports all observations and test results to the owner or the owner's representative.

II. **Permissible Exposure Limit** (**PEL):** An airborne concentration of asbestos equal to 0.1 fibers per cubic centimeter of air as an eight (8) hour time-weighted average (TWA), as determined by the method prescribed in Title 8, CCR 1529.

JJ. **Personal Monitoring:** Sampling of airborne fiber concentrations within the breathing zone of a worker.

KK. **Plasticize:** To cover floors, walls and other structural elements of a work area with NFPA approved flame resistant plastic sheeting as herein specified with all seams securely taped.

LL. **Removal**: All procedures necessary to remove asbestos-containing materials from the designated areas and to dispose of these materials at an acceptable site.

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

NN. **Surfactant:** A chemical wetting agent added to water to reduce surface tension and improve penetration.

OO. **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.

PP. **Work Area (Also known as "Regulated Area")**: Designated rooms, spaces, or areas of the project in which asbestos disturbance or removal actions are to be undertaken or which may become contaminated as a result of such abatement actions. Access to such regulated work areas is limited to appropriately trained and authorized personnel by use of signs, placards, barriers, and other similar devices.

QQ. **Worker Decontamination Enclosure System**: That portion of a Decontamination Enclosure System designed for controlled passage of workers, and other personnel and authorized visitors, typically consisting of a clean room, a shower room, and an equipment room.

1.5 ADMINISTRATION OF THE CONTRACT

A. All Work is to be performed under the scrutiny of the observation service and the owner's representative**,** who shall be free to review all work.

1.6 SAFETY

A. Submit at the pre-construction meeting written procedures for evacuation of injured workers. Aid for seriously injured workers shall not be delayed in order to comply with standard decontamination procedures. It is the responsibility of the contractor to decide if the seriousness of the injury warrants noncompliance with the standard decontamination procedures.

B. The contractor shall have a comprehensive job safety meeting at the beginning of the project with the observation service in attendance. The contractor shall give 72 hours notice ahead of this job safety meeting. The contractor shall thereafter hold tail-gate safety meetings at a minimum once per week. The initial and continuing safety meetings shall be conducted in the primary language of its employees. If needed, more than one primary language presentation must occur. The contractor shall keep a record of the topics and persons in attendance. Workers shall each sign an attendance sheet for each safety meeting.

C. The contractor shall retain licensed and certified personnel to remove equipment from service, including electricians, plumbers, etc. as required. Such additional support personnel shall not engage in disturbing asbestos.

1.7 QUALITY CONTROL

A. Safety compliance: In addition to detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, state, regional, and local authorities and publications regarding handling, storing, transporting, and disposing of asbestos waste materials. Submit

matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work. Where the requirements of this Specification and referenced documents vary, the most stringent requirement shall apply. When requirements of reference documents vary, the most stringent requirement shall apply.

B. Before the commencement of any asbestos disturbing work at the site, the Contractor shall post bilingual (as appropriate) EPA and OSHA caution signs in and around the Work Area to comply with EPA and current OSHA regulations.

C. Area monitoring may be performed by the owner or the observation service at their discretion. Area monitoring may consist of one or more of the following air sampling activities: (1) at the perimeter of the work area, (2) at the work area entry or waste load-out, (3) in the work area. If area monitoring results exceed regulatory standards or air quality criteria described herein, the contractor shall be responsible for adjusting work practices and engineering controls to prevent future exceedances of air quality standards. Where requirements of this specification and regulatory standards vary, the most stringent requirement shall apply.

D. Clearance testing may be performed at the discretion of the owner and/or observation service. Contractor shall be notified at least 24 hours prior to completion of work inside a work area that clearance testing will be performed. The contractor shall not remove work area enclosure or shut down engineering controls until written notification of clearance is received from the observation service or the owner. Clearance testing shall be performed in accordance with the following protocol:

1. Observation service shall perform a visual inspection of the work area. A visual inspection shall be considered passed when no remaining ACM or ACCM scheduled for demolition can be observed and no dust or debris is visible inside the work area. At the discretion of the owner, a work area may be cleared solely by visual inspection. After visual inspection is passed, the contractor may be required to apply encapsulant to the work area.

2. After encapsulant has been allowed to settle and dry, the observation service may elect to collect clearance air samples. The observation service shall select the total number of clearance samples needed and location of samples.

3. Air clearance samples shall be analyzed by 40 CFR Part 763, Appendix A to Subpart E TEM Method (TEM-AHERA). When approved in advance, PCM clearance by NIOSH 7400 Method may be used with a minimum air volume of 1,200 liters.

4. Air clearance samples shall be considered passing when the average concentration of all clearance samples collected inside a single work area does not exceed 70 structures per millimeter squared by TEM-AHERA.

5. At the discretion of the owner, when any clearance sample result exceeds 70 structures per millimeter squared, the contractor may be required to reclean the work area at no additional expense to the owner.

6. When PCM clearance sampling is used, the clearance criteria shall be a fiber concentration <0.010 f/cc for each individual sample. At the owner's discretion, when individual sample(s) exceed 0.010 f/cc, they may re-analyzed by NIOSH 7402 Method. The analytical results of the NIOSH 7402 Method shall take precedence over NIOSH Method 7400 analysis of the same sample.

7. If the above clearance air sampling are exceeded, the contractor shall be required to reclean the subject work area at no additional cost to the owner. Additional air clearance sampling will be performed under the above protocol and any costs to the owner (i.e. laboratory fees, observation service's time, delays to the project) may be backcharged to the contractor.

8. Exception: Since roofing jobs are not conducted within a negative pressure enclosure, representative sampling, using PCM, is collected downwind from the Project

E. Personal Monitoring and other monitoring, which are required by law, or considered necessary by the contractor for worker protection shall be the responsibility of the contractor. The contractor shall submit on a daily basis, all personal air monitoring data received. In no event shall results be submitted more than 5 working days from the day of collection.

PART 2 - WORKER PROTECTION

2.1 TRAINING PROGRAM

A. Each employee shall receive training in the proper handling of materials that contain asbestos, including all aspects of work procedures and protective measures, use of protective clothing and respiratory protection, on use of showers, on entry and exit procedures from work areas and in OSHA regulations. Each employee shall also understand the health implications and risks involved, including the illness possible from exposure to airborne asbestos fibers and the increased risk of lung cancer associated with smoking cigarettes and asbestos exposure, understand the use and limits of the respiratory equipment to be used, and understand the purpose of medical surveillance and the monitoring of airborne quantities of asbestos as related to health and respiratory equipment. The training program shall comply with federal, state and local regulatory requirements.

B. Emergency evacuation procedures to be followed in the event of worker injury shall be included in worker training program.

2.2 MEDICAL SURVEILLANCE REQUIREMENTS

A. Before exposure to airborne asbestos, the contractor will provide each employee performing labor or professional services at the project site with a current comprehensive medical exam in compliance with the requirements of California Code of Regulations Title 8, Section 1529. The medical report shall contain a statement from the examining physician that the employee can (or cannot) function normally wearing a respirator or that the safety or health of the employee or other employees will or will not be impaired by his use of a respirator. No employee will be allowed to enter the work area without having first provided a copy of their medical examination, to the owner's representative and until the submitted medical has been approved by the observation service.

2.3 PERSONAL PROTECTIVE EQUIPMENT

A. Work clothes shall consist of disposable full-body coveralls, head covers, boots, rubber gloves, safety shoes or equivalent. Sleeves at wrists and cuffs at ankles shall be secured. Fire retardant full-body coveralls are required in areas of open flame, or where required by local regulations.

B. Eye protection and hard hats shall be available as appropriate or as required by applicable safety regulations.

C. Provide authorized visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required to enter the work area.

2.4 RESPIRATORS

A. Respiratory protective equipment shall be NIOSH approved in accordance with the provisions of 8 CCR 5144 and 8 CCR 1529 unless superseded by local regulations with more stringent requirements

B. Contractor shall maintain a respiratory protection plan in accordance with 8 CCR 5144.

C. The contractor shall provide workers with approved, permanently personally-issued and marked respirators with changeable filters. The contractor shall provide a sufficient quantity of filters approved for asbestos so that workers can change filters during the workday. Filters shall not be used any longer than one (1) workday or whenever an increase in breathing resistance is detected. The respirator filters shall be stored at the job site in the Clean Room and shall be totally protected from exposure to asbestos before their use.

F. Workers shall <u>always</u> wear a respirator, properly fitted on the face, in the work area, from the initiation of asbestos disturbing work until all areas have been given written clearance by the observation service.

2.5 WORKER PROTECTION PROCEDURES

Bilingual (English and other appropriate language[s]) worker protection procedures must be posted on the job site. If the primary spoken language of all workers is English, the bilingual procedures are exempted.

A. Contractor shall comply with all required worker safety regulations including, but not limited to, 8 CCR 1529 and 8 CCR Chapter 4, Subchapter 4, Construction Safety Orders.

2.6 EMPLOYEE IDENTIFICATION

A. The contractor shall furnish an employee roster to the owner's representative for each work shift. Each employee shall bring to the job at least two forms of identification, one of which has his/her photograph.

PART 3 - PRODUCTS

3.1 GENERAL

A. Contractor shall furnish, provide and utilize the following products in the Work as specified.

3.2 PROTECTIVE COVERING (PLASTIC)

A. Ten (10) mil, six (6) mil, four (4) mil and three (3) mil polyethylene sheets in sizes to minimize the frequency of joints**. Protective covering shall be flame retardant.**

3.3 TAPE

A. Duct Tape 2" or wider, or equal, and 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 both dry and wet conditions, including use of amended water.

3.4 DISPOSAL CONTAINERS AND BAGS

A. Appropriately labeled clear, double six (6) mil sealable polyethylene bags as a minimum.

B. Appropriately labeled, sealable, impermeable drum containers.

C. Bilingual labels (English and other appropriate language[s]) on containment glovebags, waste packages, contaminated material packages and other containers shall be in accordance with EPA, OSHA, DOT and DTSC standards.

3.5 WARNING LABELS AND SIGNS

A. As required by 29 CFR 1910.1101 and CCR Title 8 1529 and other pertinent state and local regulations, whichever is the most stringent.

3.6 SURFACTANT

A. Surfactant, or wetting agent, for amending water will be 50 percent polyoxyethylene polyglycol ester and 50 percent polyoxyethylene ether, or equivalent, at a concentration of one (1) ounce per five (5) gallons of water.

3.7 ENCAPSULATING SEALER

A. Shall be a penetrating or bridging type, pollution-free, nontoxic, with a Class A fire classification as specified herein. Material shall be flexible when cured, resistant to weathering, oxidation, aging and abuse.

B. Shall be a water-dispensed coating, insoluble in water when cured.

C. Shall be used undiluted.

D. Shall have a written certification from the manufacturer that the encapsulant is compatible with the replacement material and will safely withstand temperatures of all surfaces on which the encapsulation will be applied.

E. The owner's representative may at any time take random samples of encapsulant from open containers or spray equipment for testing to insure product quality and compliance with the specifications.

F. Encapsulant found not to be in conformance with requirements of these specifications shall be removed from the site immediately. All areas where the defective encapsulant has been applied shall be resprayed with approved encapsulant or remedied in a manner, including the possibility of removal and replacement of the subject ACM, acceptable to the owner. Re-encapsulation expense shall be borne by the contractor.

G. The Contractor shall submit SDS (Safety Data Sheet) for encapsulating sealer to the Observation Service for evaluation prior to application.

3.8 GLOVEBAGS

A. The glovebag (typically constructed of six [6] mil transparent plastic) has two (2) inward-projecting longsleeve rubber gloves, one (1) inward-projecting waterwand sleeve, an internal tool pouch, and an attached labeled receptacle for Asbestos Waste.

B. Glovebag operations shall conform to the procedures in Title 8 CCR 1529.

C. Two workers shall be assigned per glovebag removal.

3.9 TOOLS AND EQUIPMENT

A. Provide suitable tools for asbestos removal and encapsulation.

B. HEPA filtered equipment:

1. All vacuums and Negative air pressure equipment shall possess high-efficiency particulate air (HEPA) filtration systems in compliance with ANSI Z9.2, local exhaust ventilation.

2. No air movement system or air filtering equipment shall discharge unfiltered air outside the Work Area.

3. All HEPA filtered equipment shall be "DOP" (or equivalent) tested on-site for all units prior to use.

C. Manometer:

1. Shall have a built-in alarm. Continuous hard copy readout required.

3.10 LUMBER

A. Shall be flame retardant and carrying markings certifying such properties.

3.11 SOLVENTS

A. Shall be non-toxic, non-carcinogenic, nonflammable (flash-point in excess of 200° F.), non-reactive with or damaging to materials it will come in contact with and approved for indoor use by regulatory agencies. Provide ventilation of Work Area as required by manufacturer. Vent exhaust to the exterior of the building and in a manner that will not result in adverse affects to

other areas of the facility, adjacent facilities or public areas. Solvents shall not be used in areas which food stuffs are stored.

B. The Contractor shall submit Safety Data Sheets (SDS) for each and every product used on site. Product SDS shall be submitted along with other pre-job submittals prior to commencement of work. No product shall be used or substituted without submitting a current SDS for review and approval by the Observation Service.

C. Mastic solvents shall be low odor and not leave any objectionable, noxious or toxic odors after use. The Contractor shall be responsible for ensuring that solvents do not leave odors.

PART 4 - EXECUTION

All Class I, II, and III asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated in a manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated area. The Contractor may permit smoking in designated areas.

4.1 WORK AREA PREPARATION

A. **Preparation procedures for removal of: ALL FRIABLE (RACM), CATEGORY I AND CATEGORY II NON-FRIABLE MATERIALS:**

1. Removal of the above or other ACM**,** unless specified otherwise, shall be executed in a contained or regulated work area.

2. Contractor shall isolate the work area for the duration of the project, completely sealing all openings including, but not limited to, HVAC ducts, diffusers and grilles, skylights, doorways, and windows, with, at a minimum, six (6) mil polyethylene taped securely to a clean surface. Spray adhesive used on finished surfaces should be avoided where possible. [Particular attention shall be paid to the sealing of cracks in the field area openings along the perimeter of the floor, openings at floor/wall intersection adjacent to utility shafts and any other openings in the floor in general that would provide an avenue for water migration. Barriers shall form a seal at vertical walls and at the floor deck above and below. For exterior work on non-friable materials, Contractor shall lay protective (6) mil polyethylene drop cloths on the ground and all horizontal surfaces, cordoning off the work area (area within the barrier tape) a minimum of 10 ft from the work as part of the regulated area. For exterior RACM work, contractor shall create a rigid containment under negative pressure surrounding the work area as part of the regulated area. The area shall be cordoned off with barrier tape. All work shall have the proper signage and caution tape demarcating the regulated area in accordance with 8 CCR 1529. Any variance in abatement methods shall be provided in a written work plan for review by the Observation Service for approval.

3. The contractor shall be responsible for any and all surface damage. Surfaces shall be left after all abatement in their original condition or better and suitable for paint preparation or buildback. Contractor is exempted from this requirement where asbestos removal work is preparatory to demolition of the building or structure.

4. HVAC systems shall be shut down, wherever possible. Contractor shall coordinate with the owner to shut down HVAC systems inside the work area. Contractor shall design his work area preparation and engineering controls as specified and/or as required to prevent contamination of the affected HVAC system.

5. Contractor shall remove all movable objects from the work area that are vulnerable to damage or contamination, or that will impede or prevent the completion of the Work. All movable objects removed from the work area shall be clean before being moved to the designated storage area.

6. Clean and cover fixed and movable objects that can remain in the work area with six (6) mil polyethylene sheeting taped securely in place. Special precautions shall be taken to protect fixed objects vulnerable to damage or contamination.

7. All fixed and movable objects requiring cleaning shall be washed with amended water and/or cleaned with a HEPA filtered vacuum.

7. All objects removed shall be adequately marked and charted on a plan to ensure proper reinstallation upon completion of the work area and receipt of clearance notification. The objects shall be stored in a location designated by the owner, and in a manner that will prevent contamination or damage to the objects. Damaged and missing objects will be replaced by the contractor at his own expense and to the satisfaction of the owner.

8. Seal and protect all light fixtures, computer systems, communication systems, lighted exit signs and other electrical items, etc., that will remain within the work area with six (6) mil polyethylene taped securely. The polyethylene cover shall be kept away from heat-generating electrical devices where fire or damage to the device is possible. Light fixtures and all other electrical items shall be thoroughly cleaned before covering. Make waterproof all electrical conduit connections and other electrical devices that will be exposed to moisture.

9. Work area (containment): contractor shall cover entire floor, as appropriate, with a minimum of one (1) six (6) mil protective coverings. Cover wall and column surfaces. as appropriate, with a minimum of one (1) four (4) mil protective covering. Floor coverings shall extend a minimum of 12" up vertical surfaces and behind wall covers. All seams shall be staggered and securely taped.

10. Install plexiglass observation window(s) at strategic location(s) in the containment barrier to allow observation of work from outside the work area. Observation windows shall have, at a minimum, an 18" x 18" viewable area. Do not install observation windows at locations accessible to building occupants or the public unless there is no other suitable location.

11. Seal all wall, plumbing, duct and other cavities to prevent asbestos materials from falling into such cavities during the work.

12. The contractor shall check <u>regularly</u> (at beginning, middle and end of each shift as a minimum) all polyethylene isolation and containment (protective) barriers for punctures, loose seals, contact with heat-generating devices, etc. Problem areas shall be repaired or mended <u>immediately</u>.

13. Maintain existing emergency exits from the building wherever possible. Emergency exit access shall be coordinated with the general contractor and the owner. Maintain a minimum of two (2) exits from work areas where possible. The first exit shall be through the

decontamination enclosure system. The second exit may be the waste load-out or a ripcord type, emergency only exit in the plastic containment at a door, window or other appropriate location. Exits, where possible, shall be on opposite ends of the work area. All exits shall be labeled in bright letters or signage. The second exit shall be labeled "Emergency Exit Only." Establish alternative exits satisfactory to fire officials where existing building or work area emergency exits are unavoidably blocked by activities of this project.

14. Provide and maintain appropriate fire extinguisher inside and outside the Work Area. [One 30-pound type "ABC" fire extinguisher is required for each 2,000 sq. ft. of floor area.]

15. Install and maintain temporary emergency exit lighting with battery backup power in all work areas. Work areas with natural lighting, and no night work to be performed, are exempt from this requirement.

16. Shutdown of electric power inside the work area during the wet removal or encapsulation phase of the Project is mandatory unless directed otherwise. Provide temporary power and lighting when necessary, and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements including appropriate ground fault protection. Temporary light fixtures will be explosion proof. Provide and maintain auxiliary diesel generator equipment where existing facility power is insufficient. Locate generator or vent generator exhaust in a manner that will prevent carbon monoxide hazards to workers and the public. When power shutdown is required, the contractor shall check for conditions where shutdown will pose a danger to the building or to the building's components. Contractor shall take all precautions necessary, including inspections and testing, to insure the safety of his employees and other building occupants from electrical hazards during the course of the project. Existing fire, smoke detection and other life safety systems shall be kept in operation at all times, or, the contractor shall install and maintain a temporary system or alternate acceptable to the owner and fire officials.

17. The Contractor shall install and maintain negative air pressure equipment in all negative pressure enclosures and mini-enclosures during the abatement and decontamination phases of the project. Such equipment shall be kept in operation until the contractor is notified by the owner or observations service that the work area has been cleared. In full negative pressure enclosures a sufficient amount of air shall be exhausted by the unit(s) to create a pressure of -0.02 inches of water within the work area with respect to the area outside the work area. The Contractor shall have a backup unit in place should the working unit fail, and for filter changes.

18. Install and maintain a manometer at every negative pressure enclosure from the time abatement begins until the contractor receives notification of clearance from the owner or observation service. Provide printouts of the manometer readings (dated & time-stamped) to the observation service at the start and end of each work shift.

19. Notify the observation service twenty-four (24) hours in advance of when preparatory steps will be completed. Asbestos abatement work shall not commence until: all preparation requirements have been completed; all tools, equipment, and materials are on hand; all required submittals, notices and permits have been approved, and until the observation service or owner authorizes in writing that work may commence.

4.2 DECONTAMINATION ENCLOSURE SYSTEMS

A. Decontamination enclosure systems (worker and equipment) general requirements:

1. Build suitable wood, metal or PVC framing as described herein and as approved by the observation service at the shop drawing submittal stage. [Framed walls susceptible to damage or which also form a security barrier between Work Areas and public areas shall be sheathed with 3/8" min. plywood.] Portable prefab units, if utilized, must be submitted for review and approval by the observation service before start of construction. Submittal shall include, but not be limited to, a floor plan layout complying with the schematic layouts bound herein, showing dimensions, materials, sizes, thickness, plumbing, and electrical outlets, etc.

B. Decontamination enclosure system for asbestos abatement work in contained work areas for Class I work, or where the exposure levels may exceed the PEL for asbestos:

1. Construct a decontamination enclosure system contiguous to the work area consisting of three totally enclosed chambers to conform as follows:

a) An equipment room with an air lock to the work area and a curtained doorway to the shower room.

b) A shower room with two curtained doorways, one to the equipment room and one to the clean room. Plastic on shower room and adjoining equipment and clean rooms shall be opaque. The shower room shall contain at least one shower with hot and cold or warm water. Careful attention shall be paid to the shower enclosure to ensure against leaking of any kind. Trap shower waste using filters having a maximum pore size of 5.0 micron, and drain into a sanitary sewer. Replace filter when they become clogged. Ensure a supply of soap and disposable towels at all times in the shower room.

c) A clean room with one curtained doorway into the shower and one entrance or exit to non-contaminated areas of the building. The clean room shall have sufficient space for storage of the workers' street clothes, towels, and other non-contaminated items. Joint use of this space for other functions, such as offices, storage of equipment, materials, or tools, shall be prohibited.

C. Decontamination area for asbestos work in regulated work areas for Class II work or where the exposure levels will not likely exceed the PEL for Asbestos:

1. Construct a Decontamination System consisting of one enclosed chambers as follows for Class II work:

a) A clean room/area with an air lock of sufficient size to allow workers to change from street clothes to protective clothing. The clean room shall also contain means to decontaminate respirators and personnel.

4.3 ASBESTOS REMOVAL - GENERAL

A. Before removal, asbestos materials shall be sprayed with amended water. The asbestos materials shall be sufficiently saturated without causing excessive dripping and to prevent ambient emission of airborne fibers, at any time, in excess of 0.05 fibers/cc. Spray materials repeatedly during the work process to maintain a wet condition. If the materials are not easily saturated, then the work area shall be constantly misted to keep fiber emission minimal.

B. Asbestos material shall be removed in manageable sections by a multi-person team, some of whom are wetting and the remainder removing and cleaning. Any material, which falls to the

floor shall be wetted and picked up immediately. Material shall not be allowed to dry out. Material drop shall not exceed 5 feet. For heights exceeding 5 feet, provide enclosed dust-proof chutes under negative pressure using HEPA air-filtration devices. Before a second area can be started, removed material shall be packed into approved and labeled packaging while it is still wet. The outside of all containers shall be clean before leaving the work area. Move containers to the waste load-out area, wet-clean each container thoroughly, and remove to uncontaminated areas.

C. The Contractor shall not remove any asbestos material in one shift than can be cleaned up and properly bagged in labeled 6-mil asbestos bags by the end of the shift. No loose asbestos material may be left in a work area after the end of any shift.

D. Asbestos material applied to steel decks, beams, columns, pipes, tanks, and other nonporous surfaces shall be wet-cleaned to a degree that no traces of debris or residue are visible.

E. Asbestos material debris, drippings, splatters, and overspray on surfaces within ceiling cavities and other accessible areas shall be removed in the same manner and cleaned to the degree as specified above**.**

F. The work area shall be kept orderly, clean and clear of work materials, polyethylene sheeting, tape, cleaning material, and clothing. All disposable material or items used in the work area shall be packed into properly labeled protective packaging and removed from the work area for disposal as asbestos waste material.

G. Protective packages and drums containing asbestos materials shall be cleaned and removed from the work area. Such waste containers shall be stored in labelled, locking storage areas or containers until that time when the materials are to be loaded and hauled to the appropriate waste disposal facility for burial. The packages and drums shall be stored in piles no higher than four (4) feet, and in a manner that will not result in damage to the packages or drums. Transport bags in covered drums or carts from the waste loadout to the storage area or transport. The waste storage area shall be locked at all times when waste is not actively being transported to or from the storage area.

H. Equipment removal procedures: clean surfaces of contaminated equipment thoroughly by wet-sponging or wiping before removal to uncontaminated areas.

I. Do not bag water used during abatement activities. Properly filter and drain water into building sanitary drain unless prohibited by local regulations. Filter shall have a maximum pore size of 5.0 microns.

4.4 SPECIFIC ASBESTOS REMOVAL METHODS

A. Specific control methods for class I work or work suspected or anticipated to exceed the PEL shall be performed using any or all the following control methods. Methods shall be selected in the contractor's asbestos plan and approved by the owner or observation service.

1. Negative pressure enclosure (NPE) systems: the negative pressure enclosure shall be kept under negative pressure with at least 4 air changes per hour. A minimum of -0.02 column inches of water pressure differential, relative to the outside pressure, shall be maintained and evidenced by manometric measurements. Air movement shall be directed away from the employees and toward a HEPA filtration device. The NPE shall be smoke tested for leaks prior to the start of work and may be tested at any time by the owner or observation service.

2. Mini-enclosure systems: the mini-enclosure system shall be constructed in compliance with 8 CCR 1529 requirements. Visible negative pressure shall be maintained in the mini-enclosure throughout the work and until notified of clearance by the owner or observation service.

3. Glove Bag Systems to remove ACM from straight runs of piping and elbows and other connections.

   a) If the concentration of asbestos fibers monitored at any times exceeds 0.05 f/cc or the preabatement level, whichever is greater, work shall be stopped and the owner shall be notified.

   b) Glove bags shall be made of 6 mil thick plastic, seamless at the bottom and used without modification. Glove bags shall be smoke-tested for leaks and any leaks sealed prior to use. Glove bags shall be used only once and shall not be moved.

   c) Glove bags shall not be used on surfaces whose temperature exceeds 150 degrees Fahrenheit. Prior to disposal, glove bags shall be collapsed by removing air within them using a HEPA vacuum.

   d) Before beginning the operation, loose and friable material adjacent to the glove bag operation shall be wrapped and sealed in two layers of six-mil plastic or otherwise rendered intact. At least two persons shall perform Class I glove bag removal.

A. Class II work not anticipated or suspected to exceed the PEL: the following engineering controls and work practices may be used:

1. Containment of the work area in accordance with Cal-OSHA Class II work procedures is required.

2. A Competent Person shall supervise the work.

3. For indoor work, critical barriers shall be placed over all openings to the regulated area.

4. For indoor work inside an enclosure, visible negative pressure shall be established in the work area. At least 4 air exchanges per hour shall be maintained in any enclosed work area. The negative pressure shall be maintained throughout the work and until the contractor receives notification of clearance from the owner or observation service.

5. For exterior work, all HVAC, ducts, openings, grilles, windows and similar openings in the work area shall contain critical barriers.

6. Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

4.5 DECONTAMINATION OF WORK AREA

A. Decontamination procedures for contained or regulated work areas (Friable, Class I and II and Category I and II non-friable), excluding ACM encapsulation work:

1. Remove all visible accumulations of asbestos material and debris. Wet-clean all surfaces within the work area to remove asbestos residue. Wait at least one (1) hour to allow for the settlement of dust, and again wet-clean, or clean with HEPA vacuum equipment, all surfaces

within the Work Area. After completing of the second cleaning operation the contractor shall perform a complete visual inspection of the work area to ensure that the work area is free of contamination.

2. Sealed drums and bags, and all equipment used in the work area shall be included in the cleanup and shall be removed from the work area via the waste loadout at the appropriate time in the cleaning sequence.

3. After cleaning, the contractor shall perform a complete visual inspection of the work area to ensure that the work area is free of any visible debris or residue.

4. Upon completion of his visual inspection, the contractor shall notify the observation service in advance that the work area is ready for pre-testing visual inspection.

5. Upon proper notification, the observation service will perform pre-testing visual inspection consisting of two elements: review the work area for general conformance with the specifications and close inspection of the work area for any traces of dust, debris, or residue of ACM. The observation service shall notify the contractor of any dust, debris, or residues observed. Any non-conformance of the work shall be remedied by the contractor until the work area is in compliance, and at the contractor's expense. Any remaining dust, debris, or residues shall be removed by re-cleaning by the contractor at the contractor's expense. After re-cleaning, pre-testing visual inspection shall be repeated.

6. Upon successful compliance with the pre-testing visual inspection by the observation service and after notification, the contractor shall encapsulate surfaces where asbestos materials have been removed. Unless specified otherwise, encapsulate those portions of the items where the ACM was located prior to the start of this contract. All surfaces within ceiling, wall, and other accessible cavities where spray-applied or trowel-applied materials have been removed shall also be encapsulated. Apply encapsulant in accordance with the manufacturer instructions. The encapsulant shall be compatible with the existing substrate and replacement materials and shall be rated to safely withstand the temperature of the items to which it will be applied. Encapsulants to be applied to structural members prior to reapplication of spray-applied or trowel-applied fireproofing must be a component of the fireproofing system when it was tested and rated by the Underwriters Laboratory (UL), American Society for Testing Materials (ASTM), Factory Mutual (FM) or other building code approved testing agencies.

7. Upon completion of the encapsulation work, the contractor shall notify the observation service that the work area is ready for clearance testing. Refer to appropriate article on air monitoring in this section for clearance testing standards.

8. Upon written notification from the observation service that the work area has passed the standard for clearance testing, the contractor shall apply, when included in the contract, the asbestos-free replacement materials and reestablish objects and systems as specified in these specifications. The plastic barriers, decontamination enclosure systems, and negative air pressure equipment may be removed by the contractor at any time after written notification of clearance.

4.6 ASBESTOS DISPOSAL REQUIREMENTS

A. Friable asbestos waste shall be contained in a clear, 6-mil asbestos labeled bag, goose necked and taped. This bag shall be placed into another labeled asbestos bag, goose necked, and taped. A

generator identification label shall be affixed to each bag. Double bagged, sealed and labeled containers of any asbestos waste shall be removed to a secure storage location daily. In general, all asbestos wastes, hazardous and non-hazardous wastes, shall be properly bagged/contained with the appropriate labeling and transported to a pre-approved waste site in accordance with the guidelines of 22 CCR Division 4 and 4.5, Hazardous Waste. The owner's designated representative shall inspect the waste and sign the uniform hazardous waste shipping manifests prior to transporting and disposal. The owner's designated representative is the **ONLY** person authorized to sign the manifest and shall retain the original generator copy of the manifest. A copy of the Land Ban Restriction notification or any required pertinent documentation must also be submitted in order to verify proper disposal.

B. Containers removed from the waste load-out must be removed by workers who have entered from uncontaminated areas dressed in clean coveralls. Workers must not enter from uncontaminated areas into the work area; contaminated workers must not exit the work area through the waste load-out.

C. The contractor shall notify the observation service twenty-four (24) hours, in advance, when asbestos wastes are to be removed from the site. The observation service must be present during the removal of asbestos wastes from the work area. A copy of the waste manifest and any other document required by State or Local agencies shall be submitted to the observation service for review prior to transporting ACM to the disposal facility.

D. At the conclusion of work, the contractor shall provide evidence (such as a bill of lading or waste manifest) that the ACM was disposed of at the approved EPA waste disposal facility. The evidence shall be submitted with the final request for payment. The contractor shall indicate on the bill of lading or waste manifest the weight, **in TONS**, of the ACM generated from the project. This weight amount must be confirmed by a party independent from the contractor.

E. The contractor shall be responsible for the safe handling and transportation of all hazardous and non-hazardous wastes generated by the execution of this contract to the designated hazardous waste disposal facility. The contractor shall bear all costs for all claims, damages, losses, and clean up expenses against the owner or the observation service, including but not limited to attorney's fees arising out of or resulting from asbestos spills on the site or spills en route to the waste disposal facility.

F. Waste manifest forms shall be provided by the Contractor. Contractor shall coordinate with the owner to ensure that the information in Box 1 (Generator's EPA ID number) and Box 5 (Generators name and mailing address) are complete and correct.

G. Contaminated clothing and polyethylene shall be disposed of as asbestos waste.

H. Waste water from wet stripping, shower room, and worker and equipment decontamination systems shall be filtered through a filtration treatment system capable of removing all particles 5 microns or greater in size before it is discharged into the sanitary sewer system.

I. The work area shall remain under abatement control measures until the observation service has completed final visual inspection and/or air sampling and given approval to dismantle the regulated area.

J. If requested, the primary polyethylene barrier shall be left in place after abatement as a dust barrier during ensuing non-asbestos construction activities. If contamination cannot be removed from the barrier, the contractor shall remove it and erect a new one in the same location.

K. All non-disposable equipment, including negative air machines shall be cleaned and decontaminated prior to removal from the regulated area.

4.7 AIR MONITORING AND TESTING

A. Personal Air Monitoring (contractor's responsibility):

1. Initial and periodic eight (8) hour TWA and thirty (30) minute excursion limit air monitoring of worker exposures to airborne concentrations of asbestos fibers shall be in accordance with Cal/OSHA (8 CCR 1529) requirements.

2. The contractor shall report personal monitoring results to the observation service within 5 working days from the end of the work shift. Worker exposures to airborne asbestos concentrations shall not exceed the Permissible Exposure Limit (PEL) of 8-hour time-weighted average (TWA) of 0.1 fibers per cubic centimeter of air.

4.8 REIMBURSEMENT OF COSTS OF THE OWNER OR THE OBSERVATION SERVICE

A. In the event that reviews and/or clearance testing by the observation service or regulatory agencies shows that the work area or any portion of the work area is not decontaminated or if the work is not in conformance with the contract documents, the owner, observation service and his consultants will record all time, tests and project-related expenses expended to monitor the work until the work is in compliance. All time, and expenses recorded by the owner, observation service and his consultants to monitor the above work, and all time, tests and project related expenses incurred by the owner and observation service and his consultants outside the project work days, work hours or contract time shall, at the discretion of the owner, be paid for by the contractor. The contractor, promptly upon receipt of the billing from the owner, shall reimburse the owner at the normal billing rate of the owner or the observation service and his consultants, or the owner is authorized to withhold funds from the contract sum, for all time spent by the owner, observation service and his consultants for reviews, testing, and other project related expenses when any of the above conditions occur.

4.9 STOPPING THE WORK

A. If, at any time, the observation service decides that work practices are violating pertinent regulations, these specifications or, in his opinion, endangering workers or the public, he will immediately notify the contractor (followed up in writing) that operations shall cease until corrective action is taken, and the contractor shall take such corrective action before proceeding with the work. Loss or damages due to a stop work order shall be borne by the contractor.

END OF SECTION

SECTION 028300

LEAD-RELATED CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies the methods, procedures, and requirements related to the removal and disposal of lead containing construction materials including, but not limited to:

1. Regulatory requirements
2. Submittals
3. Personal protective measures
4. Execution
5. Inspections
6. Waste handling

B. Related Sections:

1. Section 010100 – Hazardous Material Summary of Work
2. Section 028200 – Asbestos Abatement
3. Section 028400 – Other Regulated Materials
4. Hazardous Material Drawings (attached to end of specifications)
5. Project Manual: Plans and Specifications

1.2 SCOPE OF WORK

A. The work of this section includes the provision for all labor, materials, equipment and services necessary to effect the preparation, removal, cleaning, and disposal of lead-containing paint and components coated with lead paint as indicated by the contract drawings and within Section 010100 of this specification.

B. The work of the Contract can be summarized as follows:

1. Section 010100, Section 1.1 Paragraph A & B;
2. Administrative requirements necessary to execute the work, including but not limited to: preparation and delivery of all required submittals;

3. Packaging, transportation and disposal (including all prescribed, implied or otherwise required waste characterization and analysis) of all hazardous and non-hazardous materials and components shown, specified or otherwise implied.

1.3 SUBMITTALS:

A. Schedule: submit three (3) days before starting work and include specific dates and tasks, including man-loading for the beginning and ending of each phase of the work and dates for testing.

B. Respiratory protection program: submit three (3) days before starting work copy of the contractor's respiratory protection plan which is in compliance with ANSI 288.2, 8 CCR 1532.1 and 8 CCR 5144.

C. OSHA lead compliance plan: submit a detailed plan of the procedures proposed in order to comply with the requirements of 8 CCR 1532.1. Include in the plan all components required under the standard. Contractor shall submit personal monitoring results to owner's representative weekly.

D. Waste compliance plan: submit three (3) days before starting work copy of waste compliance plan which is in compliance with federal, state, and local hazardous waste regulations and addresses:

1. Identification of hazardous waste streams, if any, associated with the work.

2. Sampling and analysis plan: should the contractor conduct additional waste characterization for disposal purposes, a plan detailing the following elements is required to be submitted and approved:

a) Identification of material(s): location, component, color, substrate;

b) Proposed sample collection methods to be employed;

c) Wastes from renovation projects may contain a variety of painted and non-painted components. A method for representative sampling of commingled waste streams shall be included in the sampling and analysis plan;

d) Proposed analytical methods to be used;

e) Proposed analytical laboratory and associated qualifications;

f) Proposed methods of data interpretation.

3. Estimated quantities of wastes to be generated and disposed of.

4. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact. Furnish two (2) copies of EPA, state, and local permit applications, permits, and EPA identification numbers.

5. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.

6. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

7. Spill prevention, containment, and cleanup contingency measures to be implemented.

8. Names of EPA approved hazardous waste treatment or disposal facility for lead disposal.

9. Written documentation of recycling acceptance from recycling facility of all metal components that will be generated as part of this project

10. Waste streams, excluding asbestos containing materials, may be segregated or commingled prior to waste characterization at the contractor's discretion. It may be to the contractor's benefit to segregate unique components known or suspected to contain elevated levels of lead.

E. Emergency procedures plan: submit three (3) days before starting work three (3) copies of the emergency procedures plan. This plan shall be prominently posted in the clean change area. All persons entering the work area shall read and sign the procedures to acknowledge receipt and understanding of the work site layout, location of emergency exits, and emergency procedures.

F. Contractor qualifications: submit certificate of completion of approved lead abatement training course. Submit copies of training records documenting employee training in accordance with 8 CCR 1532.1.

G. Worker protection records:

1. Training: submit a list of all workers and a copy of worker training records or certification cards for each worker to the observation service prior to start of work.

2. Blood tests: Submit test results within five (5) days of test to observation service.

3. Daily log: keep a daily log listing workers names and hours worked and detailing each entry and exit. Submit a copy to observation service at interim clearance and final clearance.

1.4 CLOSEOUT SUBMITTALS:

A. Waste disposal records:

1. A written record of receipts with certified weight for disposal of materials containing lead and lead based paint contaminated items shall be furnished to the owner within forty eight (48) hours after disposal has taken place.

2. Provide a schedule showing date, amount, type of material and location disposed of within five (5) working days of disposal.

1.5 POTENTIAL LEAD HAZARD

A. The disturbance of lead containing painted building materials may cause lead contaminated dust to be released in to the environment, thereby creating a potential health hazard to workers and occupants. Ingestion or inhalation of lead contaminated dust can cause various health concerns, including but not limited to nausea, anemia, vomiting, kidney disease, nervous system disorders, and reproductive problems. All contractors, sub-contractors, consultants, and other occupants in

the vicinity of a potential lead hazard should be apprised, by the responsible parties and applicable warning signs per OSHA requirements cited herein.

B. Significant lead exposure may result from activities such as demolition of components, scraping, sanding, or grinding lead-based paint, abrasive blasting of surface coatings, welding, torch cutting, or related procedures. Where in performance of the work specified herein, there is potential for lead exposure, strict adherence to the measures and procedures of these specifications shall be mandatory.

1.6 REGULATIONS

A. The contractor shall comply with the requirements of the following regulations and guidelines governing lead abatement and disposal, as well as other applicable federal, state, and local government regulations. The regulations and/or guidelines listed herein are incorporated by reference.

B. Federal Regulators and Regulations
   1. OSHA - Occupational Safety and Health Administration
      a) 29 CFR 1926.62 – Lead in Construction Standard
      b) 29 CFR 1910.1025 – Lead in General Industry Standard
      c) 29 CFR 1926 – Construction Industry Standards
   2. DOT - Department of Transportation
      a) 49 CFR 172, 173, 178, & 179 – Hazardous Material Transportation

C. State Regulators and Regulations
   1. Cal/OSHA - California Department of Occupational Safety and Health
      a) Title 8 CCR Section 1532.1 – Lead in Construction Standard
      b) Title 8 CCR Section 3203 - Injury and Illness Prevention
      c) Title 8 CCR Section 5144 – Respiratory Protection
      d) Title 8 CCR Section 5157 - Confined Space
      e) Title 8 CCR Section 5194 - Hazard Communication
      f) Title 8 CCR Section 5208 – Lead in General Industry Standard
      g) Title 8 CCR Chapter 4 Subchapter 4 – Construction Safety Orders
   2. DTSC - Department of Toxic Substance Control
      a) Title 22 CCR Sections 66261 – Hazardous Waste
      b) Title 22 CCR Sections 66268 – Landfill Notification/Treatment
   3. California Department of Public Health (CDPH)
      a) Title 17 Division 1, Chapter 8, Work Practices for Lead-Based Paint & Lead Hazards
   4. Federal EPA
      a) 40 CFR Part 745 Lead Renovation, Repair, and Painting (EPA RRP)
   5. CIWMB - California Integrated Waste Management Board
   6. SWQCB - State Water Quality Control Board CCR, Title 23
   7. CSLB - Contractor State Licensing Board
      a) Business and Professional Code Section 7058.5

D. National Reference Standards
   1. ANSI – American National Standards Institute
      a) Z9.2 – Fundamentals Governing The Design and Operation of Local Exhaust Systems
      b) Z88.2 – Practices for Respiratory Protection
   2. NIOSH – National Institute of Occupational Safety and Health
      a) Method 7082 – Lead in air by flame AAS
   3. UL – Underwriters Laboratories

a) 586 – Standard for High Efficiency, Particulate, Air Filter Units

1.7 DEFINITIONS

A. General: definitions contained in this section are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the contract documents.

1. Action level: An airborne concentration of 30 micrograms per cubic meter (30 ug/m3) of air as an eight (8) hour time weighted average (TWA) as covered by OSHA regulations 29 CFR 1926.62 and Cal-OSHA Title 8, Section 1532.1.

2. Air monitoring: the process of measuring the lead levels of a specific volume of air.

3. Authorized visitor: The owner, observation service, testing lab personnel, or a representative of any federal, state and local regulatory or other agency having authority over the project.

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

5. Certified Industrial Hygienist (C.I.H.): a person certified in comprehensive practice by the American Board of Industrial Hygiene and qualified by training and/or experience to specify measures for the recognition, evaluation, and control of occupational health hazards.

6. Construction barrier: demarcation of the work area limiting access by unauthorized personnel.

7. Disposal bag: A 6 mil. thick leak-tight plastic bag used for transporting lead waste from work area to disposal site.

8. Elevated blood lead level: means a blood lead concentration equal to or greater than forty (40) micrograms per deciliter (ug/dl).

9. Encapsulation: involves resurfacing or covering surfaces, and sealing or caulking with durable materials, so as to prevent or control chalking, flaking, or damaged lead-containing substances from becoming part of building dust or accessible to children.

10. Enclosure: the construction of an air-tight, impermeable, permanent barrier around lead-containing material to control the release of lead dust into the air.

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

12. Final inspection: inspection by a qualified inspector, industrial hygienist, or local public health official to determine whether abatement and cleanup are complete.

13. Hazardous waste: As defined in 40 Code of Federal Regulation Part 261 - Resource Conservation Recovery Act (RCRA) and Title 22 California Code of Regulations Division 4, the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or

disposed of, or otherwise managed. Federal and state criteria for hazardous waste levels of lead are as follows:

Total Threshold Limit Concentration (TTLC): ≥1,000 milligrams per kilogram (mg/kg)
Soluble Threshold Limit Concentration (STLC): ≥5.0 milligrams per liter (mg/l)
Toxic Characteristic Leachate Procedure (TCLP): ≥5.0 milligrams per liter (mg/l)

14. HEPA filter: a high efficiency particulate air filter capable of trapping and retaining 99.97% of particles greater than 0.3 microns in diameter.

15. HEPA filter vacuum collection equipment (or vacuum cleaner): high efficiency particulate air (absolute) filtered vacuum collection equipment with a filter system capable of collecting and retaining 99.97% of particles of 0.3 microns in diameter or larger.

16. Detergent: any good detergent is acceptable.

17. Lead-based paint: any surface coating with detectable concentration of lead exceeding 5,000 parts per million or 1.0 ug/cm^2 by XRF

18. Lead containing paint: any surface coatings containing detectable concentrations of lead.

19. Lead-containing construction materials: any building system or component containing detectable concentrations of lead.

20. Lead permissible exposure limit (PEL): the employer shall ensure that no employee is exposed to an airborne concentration of lead in excess of 50 micrograms per cubic meter (50 ug/m3) of air as an eight (8) hour time weighted average (TWA) as covered by OSHA regulations 29 CFR 1926.62 and Cal-OSHA Title 8, Section 1532.1.

21. Negative pressure: air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

22. Negative pressure respirator: a respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere. Negative pressure respirators include all powered-air purifying respirators (PAPRs).

23. Negative pressure ventilation system: a local exhaust system utilizing HEPA filtration capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

24. Observation service: The owner's contracted environmental consultant.

25. Personal monitoring: sampling of lead concentrations within the breathing zone of an employee.

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

27. RCRA: Resource Conservation and Recovery Act of 1976. RCRA is an amendment to the Solid Waste Disposal Act of 1965. RCRA was amended in 1980 and most recently on November 8, 1984 by Hazardous and Solid Waste Amendments.

28. Testing laboratories: a "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

29. Time weighted average (TWA): the average concentration of a contaminant in air during a specific time period.

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

31. Wet cleaning: the process of eliminating lead contamination from building surfaces and objects by using cloth, mops, or other cleaning utensils which have been dampened with detergent and afterwards thoroughly decontaminated or disposed of as lead contaminated waste.

32. Work area: the area where lead related work or removal operations are performed which is defined and/or isolated to prevent the spread of lead dust, or debris, and entry by unauthorized personnel.

33. Lead-related construction work: Any construction, alteration, painting, demolition, salvage, renovation, repair, or maintenance of any residential or public building, including preparation and cleanup, that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead.

34. (Initial) exposure assessment: must be performed in all workplaces where employees may be exposed to lead. An assessment of potential exposure to lead as delineated in 8 CCR 1532.1. Until such time that an appropriate, trigger task and job-specific exposure assessment has been conducted, all employers are mandated to provide appropriate respiratory protection, personal protective clothing, change areas, hand washing facilities, biological monitoring and training.

35. Presumed lead-containing paint: paint or surface coating affixed to a component in or on a structure, excluding paint of surface coating affixed to a component in or on a residential dwelling constructed on or after January 1, 1979, or a school constructed on or after January 1, 1993.

1.8 OWNERS OBSERVATION

A. The owner may authorize an observation service to provide the following inspection, testing, and monitoring services including, but not limited to:

1. Wipe lead testing to establish pre-abatement and post abatement lead concentrations.

2. Visual inspections to verify contractor's compliance with the specifications, as well as applicable regulations, regarding hazard control measures, and related decontamination procedures.

3. Wipe sampling for lead contamination to determine whether contractor has successfully completed clean-up and met the project decontamination criteria.

4. Interpretation of technical sections of the contract documents, and coordination with owner and contractor for enforcement of regulatory and contractual conformance, including stop work issues.

B. The cost of the owner's representative will generally be the responsibility of the owner except under special circumstances. The contractor shall be responsible for the cost of the owner's representative for additional services performed when: a) the contractor's work area fails final clearance inspection and/or testing; or b) additional workdays or workday hours (overtime) are required by the contractor; or c) The contractor exceeds the allowable time frame for completion; or d) additional services associated with response to an uncontrolled, unauthorized release to the environment as a result of the contractor's performance of the work.

1.9 CONTRACTOR QUALIFICATIONS

A. General superintendent: provide a general superintendent whenever contractor's personnel are on site who is experienced in administration and supervision of lead-related construction projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the contractor's representative responsible for compliance with all applicable federal, state and local regulations, particularly those relating to lead-containing materials.

B. Contractor firm and supervisor (lead renovator) shall have EPA RRP certification for work on lead-based paint materials.

1. The general superintendent/supervisor and workers must trained in accordance with Cal-OSHA 8 CCR 1532.1, Title 17 Division 1 Chapter 8, and EPA RRP regulations in their respective disciplines, and have had on-the-job training in lead abatement procedures. Submit documentation for each worker per section 1.3 of these Specifications.

2. Contractor shall submit documentation that all employees engaged in surface preparation/lead paint disturbance activities have had the appropriate medical examinations within the prescribed time periods immediately preceding project start-up. Documentation shall include, but is not limited to, baseline blood lead levels performed in accordance with 8 CCR 1532.1.

3. Contractor shall submit statement from examining physician that each employee is fit to wear a respirator in accordance with 8 CCR 5144 within the last twelve months.

4. Documentation that all employees have passed respiratory fit tests within the past year.

5. The contractor will provide a copy of their lead compliance program specific for this project, as specified in 8 CCR 1532.1, and indicated in Section 1.3 Submittals, above.

PART 2 - PRODUCTS

2.1 PROTECTIVE COVERING

A. Polyethylene sheets, of 6 mil thickness, in dimensions of adequate width to minimize frequency of joints. All polyethylene sheeting shall be UL listed and certified as fire retardant or non-combustible.

2.2 TAPE

A. Duct tape, two inches or wider, capable of sealing joints of adjacent sheets of plastic sheeting or for attachment of plastic sheeting to finished or unfinished surfaces.

2.3 CLEANERS

A. Wet wiping for decontamination shall be accomplished with a detergent wash solution. Alternate cleaning and decontamination agents shall be subject to approval by the owner' representative.

2.4 CHEMICAL PAINT REMOVERS

A. Chemical remover and all components of the chemical removal system shall contain no methylene chloride products. Chemical removal systems shall be compatible with the painted substrate materials and shall leave the substrate unharmed. The chemical removal system and paint removal procedures shall leave an acceptable smooth surface, capable of receiving an application of the primer/sealer coat without further treatment.

2.5 NOT USED

2.6 SPRAY ADHESIVE

A. Spray adhesive shall not contain methylene chloride, as listed on the SDS. Provide spray adhesive that is specially formulated to adhere to polyethylene sheeting.

2.7 DISPOSAL CONTAINERS

A. Provide 6-mil thick polyethylene sheeting, 6 mil leak-tight polyethylene bags and other impervious containers as required by applicable regulations. All waste shall be labeled as potentially hazardous waste unless proven otherwise by appropriate sampling and laboratory analysis.

B. All hazardous waste shipping containers shall meet federal and California DOT requirements.

2.8 WARNING SIGNS AND LABELS

A. Caution signs are to be a minimum of 14 x 20 inches and include phrase "CAUTION - LEAD HAZARD - KEEP OUT UNLESS AUTHORIZED" in lettering at least 2" in height. These signs shall be posted at each approach to the work area.

B. When employee exposures are shown or expected to be above the PEL, the contractor shall post the following sign:

DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NO EAT DRINK OR SMOKE IN THIS AREA

C. Hazardous waste labels in accordance with federal, state and local regulations, including, but not limited to the California Code of Regulations, Title 22 Chapter 30 and the U.S. Department of Transportation 49 CFR Parts 172, 173, 178 and 179.

2.9 PERSONAL PROTECTIVE EQUIPMENT

A. Workers shall wear full body disposable coveralls with hoods and booties. Suits may be reinforced with duct tape at the contractor's discretion. Suits will be worn inside the work area after the area passes pre-abatement inspection and shall remain in use until the area passes final clearance inspection. Suits shall be promptly removed and replaced if torn or damaged.

B. Goggles with side shields will be worn when working with a material that may splash or fragment, or if protective eye wear is specified on the Safety Data Sheets (SDS) for that product.

C. Respirators and filter types shall be selected in accordance with the requirements of 8 CCR 5144, 8 CCR 1532.1, and the contractor's respiratory protection plan. Additional respiratory protection by supplemental filters, such as organic vapor cartridges, may be needed when handling some coating products. Consult the SDS and obtain the proper filters as necessary.

D. In addition, all Cal-OSHA requirements, such as hard hats, hearing protection, etc. are required.

2.10 TOOLS AND EQUIPMENT

A. Provide suitable tools for the decontamination and removal of lead-based-paint including required HEPA vacuums and exhaust units, airless sprayers, ground fault interrupters, hand tools, wipes, ladders, and scaffolds. Mechanical abrasion tools shall be equipped with local HEPA exhaust and subject to approval by the owner's representative. All tools and equipment brought on site shall be clean and free of contamination from lead and other hazardous materials. HEPA filtered equipment shall be labeled with a warning label and dedicated to lead based paint work to prevent combining hazardous wastes of differing characteristics.

B. Provide adequate support equipment, including, but not limited to lumber, hardware, decontamination showers, sprayers, hoses, drain pans, miscellaneous collection devices, and secure holding facilities.

PART 3 - EXECUTION

3.1 GENERAL

A. Several levels of preparation and lead removal alternatives are outlined in this section to address various conditions and methods of lead paint and lead containing construction material removal.

3.2 SITE PREPARATION

A. The level of preparation described in this section is appropriate for removal of lead-containing painted architectural components, and for the demolition of wall and ceiling systems containing intact lead based paint as specified in these contract documents.

1. Post Cal-OSHA warning signs at all immediate entrances to work area.

2. Cover all floors (as possible depending on the materials affected) and non-moveable objects (within 10 feet of the affected area, or otherwise in accordance with applicable lead hazard guidelines) with 6 mil polyethylene sheeting and seal with duct tape.

B. Interior work area demolition

1. Post signs as stated above and seal all openings to the work area with a minimum of 6 mil polyethylene sheeting.

2. Install double flapped curtain doorway or equivalent at the entrance to the work area.

3. Remove all moveable objects from the work area.

4. Cover all floors (as possible depending on the materials affected) and non-moveable objects (within 10 feet of the affected area) with 6 mil polyethylene sheeting and seal with duct tape.

5. Pre-clean all horizontal surfaces immediately adjacent to components to be abated and protect with 4 mil plastic sheeting and duct tape.

6. Shut down and isolate heating or cooling air handling systems and seal all penetrations within the work area.

7. Notify the owner's representative when the work area is ready for inspection. Abatement work shall not proceed until the owner's representative has inspected and approved work area preparations.

C. Preparation for exterior removal/demolition work

1. Cordon off the work area extending at a minimum of 10 feet horizontally beyond the area of work with barrier tape and warning signs as specified herein.

2. Pre-clean visible suspect lead-based paint dust and debris around and under areas where lead-based paint or LBP components will be removed. Use HEPA vacuums and wet methods to perform this cleaning which shall include, at minimum, the designated work area.

3. Cover ground and horizontal surfaces of work area (area within barrier tape) with a minimum of

one layer of six (6) mil polyethylene sheeting. Secure the plastic on the building foundation as possible. Horizontal surfaces include scaffolding and/or other work platforms. Extend the plastic from the foundation to 10 feet beyond the work area. Seal all seams with tape and secure plastic to prevent undesired movement.

4. Where elevated lead-containing components are likely to generate airborne dust or paint chips, devise a suitable containment to control such dust and prevent dispersal by wind. Exterior removal which generates lead dust and debris shall not be attempted when winds or air currents (i.e., greater than 15 mph) prevent containment of such waste material within the designated work area. To conduct exterior removal under windy conditions, the contractor shall implement special, safe and effective countermeasures to ensure containment of lead dust and debris. These countermeasures include but are not limited to protective shrouds or mini-containments on work platforms.

5. Provide a designated entry/exit point to exterior work areas suitable for workers to properly decontaminate and exit from the work area as specified herein. Install lead caution and warning signage as specified above.

6. Complete any additional preparation work required for the specific abatement method to be used.

3.3 WORKER SAFETY/DECONTAMINATION PROCEDURES

A. The contractor shall employ only workers medically qualified and trained for lead work and respirator usage.

1. Medically qualified shall mean that the worker has had an occupational medical exam for lead exposure and respirator use within the last 12 months, in accordance with 8 CCR 1532.1, and shall have had a blood lead test within the last 6 months.

2. Each worker shall have completed formal documented training in lead hazards and lead abatement.

3. The contractor's superintendent (competent person) shall have received formal training in lead hazards and abatement methods.

4. The contractor shall assure that no worker is permitted to perform lead abatement work until the owner representative has received and approved all of that worker's medical, training, and respirator fit test certifications.

B. The contractor shall provide a negative exposure assessment of similar work conducted by similarly trained workers and from with the preceding year or perform an initial exposure assessment in accordance with 8 CCR 1532.1. This includes, but is not limited to, collecting personal air samples to determine the employees actual exposure to lead dust during construction activities. Personal samples will be collected by the contractor pursuant to Cal-OSHA regulations.

C. Each worker, upon entering the job location, shall proceed to the designated clean room/area and don, at a minimum, a half-mask, negative pressure respirator equipped with HEPA filters, and disposable, full-body, tyvek suit, gloves, and other safety apparel as required (i.e. hard-hats, steel toed shoes, etc.) before entering the work area. The above PPE must be worn during all phases of the paint and/or component removal process. This PPE must be worn for the

duration of this project, **or until a negative exposure assessment is provided for the subject work task documenting that worker exposure to lead does not exceed the action level (30µg/m³).**

D. All disposable clothing worn in each work shift shall be HEPA vacuumed and removed prior to exiting the work area and shall be properly segregated and placed in containers for non-hazardous disposal. Workers shall then proceed to the designated wash station before removing respirator to adequately wash face, hands, arms, etc.

E. All tools and equipment shall be decontaminated by HEPA vacuuming and/or wet wiping prior to being taken out of the work area.

F. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site.

G. Each worker shall have a final medical blood lead laboratory test within one week of job completion and before engaging in other lead related work.

1. Blood level monitoring: all workers must have blood lead levels tested as baseline (prior to beginning of work) and at the completion of job.

H. The contractor shall provide all workers, foremen, and superintendents with properly fitted respirators approved by NIOSH and OSHA at no cost to worker. Authorized visitors (i.e. federal, state and local inspectors) must provide a current medical report certifying they are approved to wear respirators. When respirators and disposable filters are employed, sufficient replacement filters will be provided by the contractor for the workers and any visitors. All workers must be properly trained in the care, use and maintenance of respirators. The contractor is responsible for requiring worker fit tests within the last year.

Unless an NEA is provided, the minimum respiratory protection required for interior lead related demolition on this project will be a half mask, air purifying respirators, equipped with HEPA filters for airborne lead dust, and in accordance with Section 2.09.

I. Contractor will perform air monitoring as required by 8 CCR 1532.1 in order to determine 8-hour TWA of lead dust to which any worker may be exposed. The 8-hour TWA for any worker shall not exceed the following:

Permissible exposure limit lead: 50 micrograms per cubic meter of air (50µg/m³) for the 8-hour TWA.

3.4 GENERAL REMOVAL PROCEDURES (THE PROCEDURES INCLUDED HEREIN ARE NOT PRESENTED IN A REQUIRED PHASED APPROACH)

A. Dismantling/replacement

1. Prepare work site and provide protective measures in accordance with Section 3.2, above.

2. Building components to be dismantled shall be carefully removed in manageable sections. Workers shall exercise caution to avoid release of lead contaminated dust into the air. Do not saw or cut the materials unnecessarily. Dismantling operations shall be conducted in a careful, safe manner, insuring that intact lead-based paint remains so.

3. Separate building components with intact, well grounded lead-based paint from other accumulated debris. Collect small debris off dropcloth and place in 6 mil bags for appropriate storage in the designated waste storage area.

4. Properly decontaminate the work area in accordance with procedures outlined in Section 3.3, above.

B. Hand scraping

1. Prepare work site and provide protective measures in accordance with Section 3.2 above.

2. Assure that dropcloths or protective flooring plastic are secured to building and that seams are adequately sealed with tape.

3. After all site preparation is complete and approved by the Owner's representative, spray the affected surfaces with a fine mist of amended water before scraping begins. Using appropriate tools, scrape ungrounded lead based paint so as to carefully collect all paint chips on the dropcloth.

4. Throughout the procedure, constantly wet the surfaces and debris to minimize the potential for airborne dust.

5. Periodically collect accumulated debris into appropriate 6 mil plastic bags. When all loose paint within a specified work area has been removed or at the end of the shift, seal the waste containers and place in the designated waste storage area.

6. Remove protective plastic sheeting and decontaminate work area in accordance with procedures outlined in Section 3.03, A, above.

C. Chemical stripping

1. If chemical stripping is to take place on building components left in place, prepare each work area in accordance with Section 3.02 above. If components are to be removed for stripping at a centralized location, the stripping area should be appropriately isolated and prepared in accordance with requirements outlined above. All areas from which components are removed should be adequately protected from contamination of lead-based paint debris.

2. Chemical Removal System shall be pre-approved by Owner's representative.

3. Material Safety Data Sheets for each chemical product shall be on-site at all times and available for review by the workers and by the Owner's representative.

4. The Project Superintendent (Competent Person) shall review the contents of the material safety data sheets and the safe removal procedures with the workers prior to chemical removal process.

5. Workers shall wear chemical goggles, impervious gloves, aprons, and booties over the standard protective clothing prior to beginning the chemical removal process.

6. Stage or install a temporary eyewash capable of providing a 15 minute flush within the immediate work area if corrosive paint removal products are used. In addition, an emergency shower shall be available within 50 feet of the removal operation.

7. Chemical stripping agents (and neutralizers) shall be applied in strict accordance with the manufacturers recommendations.

8. Remove all paint down to the bare substrate. Ensure that the chemicals used and the associated removal methods leave a clean smooth surface capable of accepting a suitable primer/sealer coating after final cleaning.

9. Containerize all paint and chemical waste in impermeable containers labeled as hazardous waste. Package all contaminated rags and protective equipment, and disposable cleaning items in separate labeled impervious containers and transfer waste containers to secure, designated waste storage area.

10. Upon completion of stripping operations, clean and decontaminate the work area in accordance with the procedures outlined herein. (Section 3.03, Part A.)

D. Gross removal of lead containing components

1. Remove any associated non-lead containing hardware or construction interference (electrical and telephone utilities, conduit, piping, etc.) as required and store in construction area until final disposition is determined by the owner's representative.

2. Remove lead containing components as specified herein and by the contract drawings. Scrape any painted seam at edge of each component with utility knife or blade tool and remove any exposed accessible fasteners. Mist the affected surfaces of the lead containing component being removed lightly with a fine mist of amended water.

3. Special precautionary controls shall be used as necessary to prevent lead dust or debris from being carried or blown out of the controlled area by wind or air currents.

4. Using appropriate tools, begin to remove the lead containing component by prying first behind nailing locations and/or removing accessible fasteners. Continue prying up the lead containing component being careful not to break or create chipping until the lead containing component is completely removed. Take necessary precautions to avoid damage to adjoining walls and/or associated surfaces.

5. Each component shall be carefully lowered to the ground, not dropped or thrown. Clean up dust and debris as removal proceeds.

6. Once removed, remove or flatten any remaining fasteners and wrap the lead containing component in six (6) mil polyethylene sheeting, seal with duct tape, wet-wipe and transfer to secure waste storage for recycling or disposal.

7. HEPA vacuums and wet-wiping shall be used to ensure any resulting lead dust, paint chips or debris have been cleaned up from horizontal surfaces and polyethylene sheeting prior to moving ladders, scaffolding, man-lifts or other working platforms to the next work area to be abated.

E. Removal of lead containing ceramic tile

1. Not used

F. Removal of elemental lead components

1. Remove any associated non-lead containing hardware or construction interferences (casework, fixtures, partitions, utilities etc.) as required and store in construction area until final disposition is determined by the owner's representative.

2. Remove elemental lead components where specified herein and by the contract drawings. Spray the affected surfaces being removed lightly with a fine mist of amended water.

3. Special precautionary controls shall be used as necessary to prevent lead dust or debris from being carried or blown out of the controlled area.

4. Using appropriate tools begin to remove the elemental lead components starting from the highest point. Continue removing the lead components while being careful to prevent lead dust or debris from being generated.

5. Clean up dust and debris as removal proceeds.

6. Once removed, place the lead components in two six (6) mil polyethylene bags, seal with duct tape, wet-wipe and transfer to secure waste storage for recycling (contractor shall refer to paragraph 3.6(H), below, for recycling requirements for elemental lead components).

7. HEPA vacuums and wet-wiping shall be used to ensure any resulting lead dust and debris have been cleaned up from horizontal surfaces and polyethylene sheeting prior to moving ladders, scaffolding, man-lifts or other working platforms to the next work area to be abated.

3.5 INSPECTION PROCEDURE WORK AREA CLEARANCE

A. After the final clean-up, a preliminary visual inspection will be conducted by the owner's representative to ensure that all visible dust and debris has been removed. The contractor shall provide the owner's representative at least 24 hours notice prior to scheduling inspection.

B. If the work area is not visibly clean, as determined by the preliminary visual inspection by the owner's representative, the contractor shall re-clean and decontaminate as described in Section 3.3, at its own costs, until the work area passes inspection.

C. Clearance criteria to release contractor from each work area is as follows:

1. No visible debris.

2. At the owner's discretion, wipe samples or bulk soil samples may be collected for clearance purposes. The clearance criteria for the samples are as follows:

a) Interior Floors: $<40\ \mu g/ft^2$ lead

b) Interior Horizontal Surfaces: $<250\ \mu g/ft^2$ lead

c) Exterior Horizontal Surfaces: $<400\ \mu g/ft^2$ lead

d) Native Soil: $\leq$400 parts per million lead (TTLC)

D. A work area shall be considered cleared only after all areas within the work area have met the above criteria.

E. If any of the native soil samples exceed the clearance criteria, the entire work area must be re-cleaned and retested until the clearance criteria is met.

F. If a work area fails the clearance criteria specified above, the contractor shall be responsible to re-clean the area at no additional cost to the owner and shall be responsible for associated additional re-inspection costs, including laboratory fees.

3.6 WASTE HANDLING AND DISPOSAL

A. The contractor shall provide for secure on-site storage of lead related waste. Waste storage location, equipment, containers and methods shall be in compliance with the requirements of 40 CFR 262 and 265 and California Code of Regulations Title 22.

B. The owner's representative has determined through sampling and analysis, that various building components contain lead. These items have been presented in the Section 010100 and the associated hazardous material demolition plans which are part of these documents. Waste profiling sampling has not been performed.

C. The contractor shall remove, handle and dispose of all listed building components containing detectable concentrations of lead. Lead containing waste shall be profiled and disposed of in accordance with the contractor's approved waste compliance plan and California Title 22 and Federal RCRA regulations. Lead-containing components that are not otherwise classified as hazardous waste, may be disposed of as a non-regulated lead containing construction waste at an approved landfill.

D. At the contractor's sole option and expense, additional waste characterization necessary to determine the soluble characteristics of identified waste streams may be performed. Such additional sampling and analysis shall be performed in accordance with section 1.3D of this section. The contractor shall provide all required details of 1.3D in a manner which provides 3 days for review and comment. The contractor shall not proceed with its own waste characterization without receiving written approval from the owner's representative.

   If the contractor chooses this option, it must demonstrate and certify that the sampling performed is in accordance with Title 22, CCR 66261.20 and EPA SW-846 (most current version) including the Chapter 9 Statistical evaluations.

E. To the extent that the contractor chooses option 3.6D, above, all waste containers and packaged waste shall be stored in a designated, secure waste storage area and labeled "PENDING ANALYSIS" with the following information:

   1. Waste category (chip/dust and removed components)

   2. Date accumulated

   3. Name and address of owner

   4 Origin of waste

F. The contractor is responsible for all costs associated with optional characterization and landfill profiling of waste.

G. Disposal

1. The contractor shall submit name, address, and telephone number of landfill or landfills and transporter to observation service for approval, prior to disposal. This includes those landfills used for waste categories determined to be non-hazardous.

2. The contractor shall have all waste transported from the site in accordance with the requirements of 40 CFR 263 and 264, and disposed of properly in accordance with 40 CFR 268, 49 CFR Parts 172, 173, 178, and 179 and California Code of Regulations Title 22.

3. The contractor shall prepare waste shipping manifests for review by the owner. The manifests shall be signed by the duly authorized representative of the owner and copies retained by the owner.

4. Copies of the landfill weight tickets shall be provided to the owner to verify the amount of waste disposed of at the site.

5. The contractor is responsible for all costs associated with transportation and disposal of the waste.

6. Waste manifest forms shall be provided by the contractor. Contractor shall coordinate with the owner to ensure that the information in Box 1 (Generator's EPA ID number) and Box 5 (Generators name and mailing address) are complete and correct.

H. Recycling

1. Contractor shall coordinate with the owner for the recycling of all removed elemental lead components.

2. Contractor is responsible for all costs associated with transportation and recycling of lead containing building components.

3.7 STOP WORK ORDERS

A. The owner or owner representative has the authority to stop work if it is determined that conditions or procedures are not in compliance with the work plan and/or applicable regulations; the contractor is deficient in providing required submittals; the waste is not securely stored; or a potential release of lead dust to outside the work area is imminent based on the owner's or the owner's representative's judgment.

B. The work stoppage shall remain in effect until conditions have been corrected and corrective measures have been taken to the satisfaction of the owner and/or owner's representative.

END OF SECTION

SECTION 028400

OTHER REGULATED MATERIALS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The scope of work involves the removal, handling, staging, disposal and/or recycling of hazardous materials as identified in the solicitation and contract documents. Removal, handling, staging, disposal and/or recycling of these materials shall be performed in strict accordance with all applicable federal, state and local regulations.

B. Related sections:

1. Section 010100 – Hazardous Material Summary of Work

2. Section 028200 – Asbestos Abatement

3. Section 028300 – Lead-Related Construction

4. Hazardous Material Drawings (attached at the end of specifications)

5. Project Manual: Plans and Specifications

1.2 SCOPE OF WORK

A. The work of this section includes the provision for all labor, materials, equipment and services necessary to effect the preparation, removal, and disposal of other regulated materials (ORMs) as indicated by the contract drawings and within Section 010100 of this specification.

B. The work of the contract can be summarized as follows:

1. Section 010100, section 1.1 paragraph A & B;

2. Administrative requirements necessary to execute the work, including but not limited to: preparation and delivery of all required submittals;

3. Packaging, transportation and disposal (including all prescribed, implied or otherwise required waste characterization and analysis) of all hazardous and non-hazardous materials and components shown, specified or otherwise implied.

1.3 TRAINING, PERMITS, LICENSES AND NOTIFICATIONS

A. The contractor shall be responsible for obtaining all training, permits, certifications and notifications required for the safe removal, handling, disposal and/or recycling of these materials. All contractor and subcontractor personnel must have completed all required federal, state and local training and hazard communication prior to work. The contractor shall also obtain and

submit documentation that disposal and recycling facilities have all required permits and certifications, as required by federal, state and local laws and regulations.

1.4 SUBMITTALS

A. The contractor shall submit a detailed plan of action describing the methods to be utilized to accomplish the work. Plan shall include, at a minimum:

1. lockout/tagout,

2. emergency spill procedures,

3. hazard communication training,

4. personal protective equipment,

5. location of staging area,

6. signage and control procedures.

Contractor shall coordinate signing of all manifests with the owner's designated representative and shall provide copies upon request of all manifests, weight tickets, receipts and/or statements that all materials have been properly disposed and/or recycled.

B. The owner's designated representative shall inspect the waste and sign all uniform hazardous waste shipping manifests prior to transporting and disposal. The owner's designated representative is the **ONLY** person authorized to sign the manifest and shall retain the original last copy of the manifest.

C. Waste compliance plan: submit three (3) days before starting work copy of waste compliance plan which is in compliance with federal, state, and local hazardous waste regulations and addresses:

1. Identification of hazardous waste streams, if any, associated with the work.

2. Sampling and analysis plan: should the contractor conduct additional waste characterization for disposal purposes, a plan detailing the following elements is required to be submitted and approved:

- Identification of material(s): location, component, color, substrate;

- Proposed sample collection methods to be employed;

- Wastes from renovation projects may contain a variety of PCB or mercury containing components. A method for representative sampling of the waste streams shall be included in the sampling and analysis plan;

- Proposed analytical methods to be used;

- Proposed analytical laboratory and associated qualifications and;

- Proposed methods of data interpretation.

3. Estimated quantities of wastes to be generated and disposed of.

4. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24 hour point of contact. Furnish two (2) copies of EPA, state, and local permit applications, permits, and EPA Identification numbers.

5. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.

6. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

7. Spill prevention, containment, and cleanup contingency measures to be implemented.

8. Names of EPA approved hazardous waste treatment or disposal facility for ORM disposal.

9. Written documentation of recycling acceptance from recycling facility of all recyclable components that will be generated as part of this project

1.5 PERSONNEL PROTECTIVE EQUIPMENT (PPE)

A. The contractor will take all necessary precautions to ensure that employees are not exposed to hazardous materials. Employees shall utilize personal protective clothing, eye protection and hand protection when handling hazardous materials. Contractor shall provide suitable hand/face and eye wash stations or equivalent.

PART 2- PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PHASING OF WORK - SEQUENCE AND EXECUTION

A. Phase 1, salvage operations (includes removal and recycling), shall commence prior to Phases 2 (hazardous material removal) and 3 (renovation) in accordance with the owner's written Notice to Proceed letters.

B. Shut down and lock out electric power to all work areas as necessary. (The contractor shall be allowed to use existing power in the building to the extent that it is available for use.) The contractor shall provide temporary power and lighting, and ensure safe installation of temporary power services and equipment, as specified in applicable electrical code requirements.

C. Contractor shall isolate all electrical sources from emergency lighting, switches, gauges, pumps, vacuums, mechanical equipment, etc. prior to removal of transformers, oils, fluids, etc. Responsibility to coordinate scheduling of these areas to be shut down or disconnected will be the responsibility of the contractor.

D. Prepare staging areas for temporary placement of hazardous materials, as necessary, by covering the floor with at least one (1) layer of 6-mil plastic sheeting (as a drop cloth), taped down.

Segregate separate waste streams at all times. Label and isolate staging areas as necessary. Staging location must be pre-approved by the owner/owner's representative.

3.2 PCB TRANSFORMERS, MERCURY SWITCHES, MERCURY THERMOSTATS, OILS, REFRIGERANTS, HVAC COMPONENTS

A. The Contractor shall remove regulated materials components. Containers with regulated materials shall remain intact (unbroken) and shall be placed carefully into containers designed to hold recyclables/regulated waste (preferably obtained from the manufacturer, recycling/TSD facility). Special care shall be taken not to break containers during, removal, handling and transport.

B. The contractor shall thoroughly decontaminate any areas where waste containers are accidentally broken.

C. The contractor shall visually inspect transformers. Transformers labeled "No PCB's" will be placed in an on-site receptacle and disposed of as construction debris. All other unlabeled PCB-containing transformers will be removed and placed into 55-gallon steel drums (17C or 17H) or other DOT-approved container appropriately labeled in accordance with EPA and DOT regulations.

D. The Contractor shall wrap any leaking transformers in 6-mil plastic disposal bags and place in a separate steel drum (17C or 17H). Each disposal drum will have a sufficient amount of oil absorbent material placed in the bottom to contain any oil from ballast's that may leak during transport. Any materials that come in contact with leaking PCB wastes shall be considered contaminated and disposed of as PCB waste.

E. The contractor shall cut wires and remove any existing mercury switches/thermostats. All components shall be double bagged in 6 mil plastic prior to recycling/disposal.

F. Contractor shall disconnect all battery operated equipment. Contractor shall remove batteries from the components and package them for transport to a recycling facility.

G. Contractor shall remove fluorescent tubes and package them for transport to a recycling facility, due to large number of tubes and possible mercury.

H. For HVAC components (oils, refrigerants, etc) all removal and recovery practices shall be performed in accordance with 40 CFR Part 82, Subparts A and F that are relevant to the disposal of refrigeration/AC equipment. These regulations specify prohibited practices, certifications for technicians to perform refrigerant recovery, evacuation and disposal, waste management, recordkeeping, and procedural requirements for transport.

I. Transport all properly containerized materials to an approved disposal or recycling facility. The contractor shall be responsible for determining and complying with all current applicable regulations pertaining to waste handling and transport of PCB-containing transformers, lead containing batteries, mercury switches and mercury-containing lamps, oils and refrigerants. The original waste shipment record documenting proper transport, recycling, and disposal of unrecycled components (i.e., PCB-containing solids and liquids) shall be completed and submitted to the observation service upon project completion. No hazardous wastes will be stored at the project site for more than 90 days from the date of first accumulation.

3.3 DISPOSAL

A. The Contractor shall submit name, address, and telephone number of recycling, disposal facility or landfills and transporter to observation service for approval, prior to disposal. This includes those landfills used for waste categories determined to be non-hazardous.

B. The owner's designated representative shall inspect the waste and sign the uniform hazardous waste shipping manifests prior to transporting and disposal. The owner's designated representative is the **ONLY** person authorized to sign the manifest and shall retain the original last copy of the manifest.

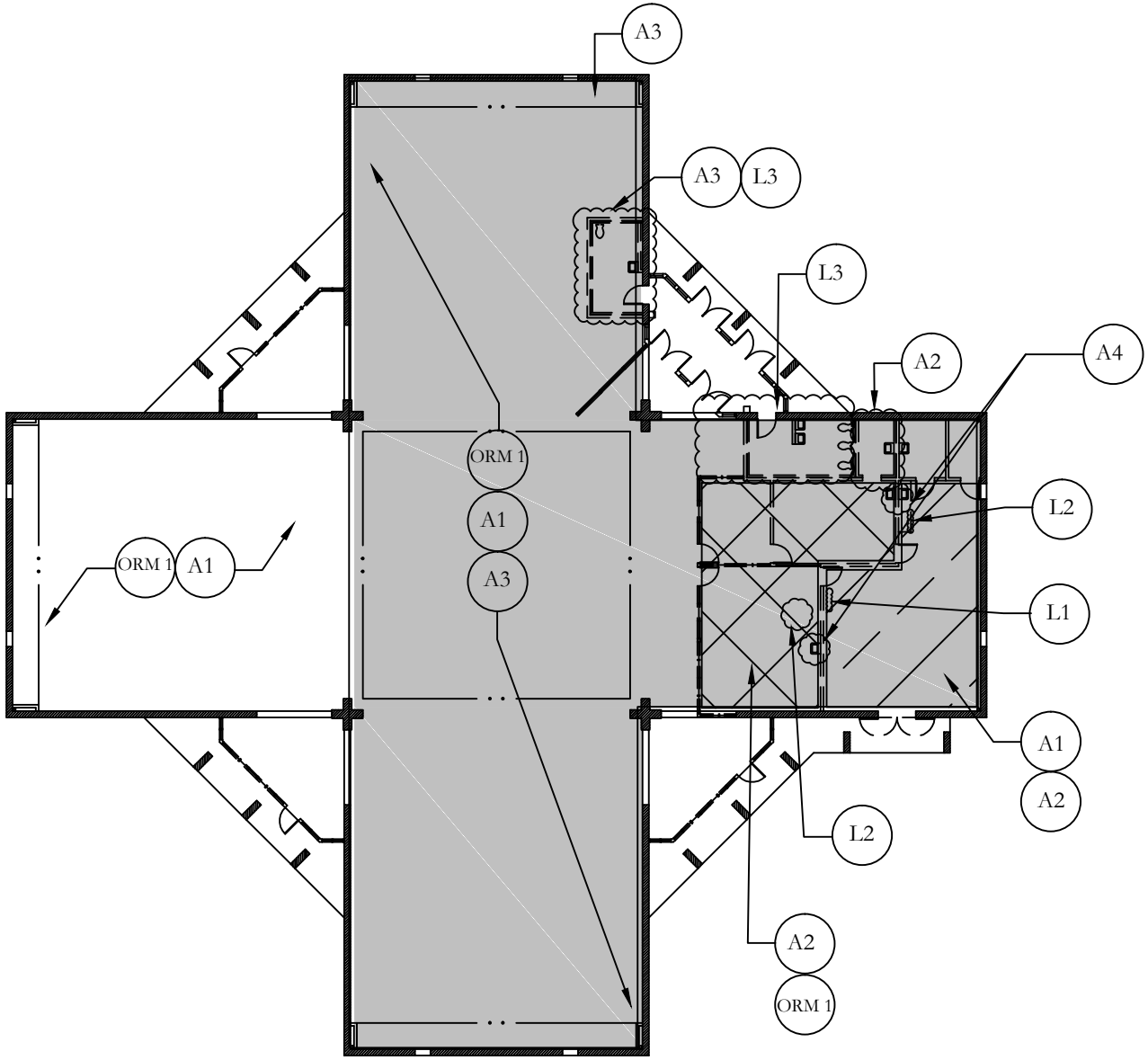
C. The contractor shall have all waste transported from the site in accordance with the requirements of 40 CFR 263 and 264, and disposed of properly in accordance with 40 CFR 268, 49 CFR Parts 172, 173, 178, and 179 and California Code of Regulations Title 22.

D. Copies of the landfill weight tickets shall be provided to the owner to verify the amount of waste disposed of at the site.

E. The contractor is responsible for all costs associated with transportation and disposal of the waste.

F. Waste manifest forms shall be provided by the contractor. Contractor shall coordinate with the owner to ensure that the information in Box 1 (Generator's EPA ID number) and Box 5 (Generators name and mailing address) are complete and correct.

END OF SECTION



GENERAL HAZARDOUS MATERIALS SHEET NOTES- ESUSD-IH-Bldg J

1. All painted surfaces are considered as having lead-containing coatings. All work practices, including all SOFT AND HARD DEMOLITION, REMOVAL/INSTALLATION of MATERIALS and HOT WORK, on said coatings shall be performed in accordance with the Cal-OSHA Lead in Construction Standard (8 CCR 1532.1) and EPA RRP regulation (for LBP). Contractor to coordinate all work according to all contract drawings and plans.

2. All suspect lead-containing items with significant lead content (detailed on drawing) removed as a result of demolition and scheduled for disposal shall be characterized for proper waste profiling. Contractor to coordinate sample collection and analysis with Environmental Consultant.

3. Mechanical equipment located throughout the roofs may contain other regulated materials in addition to asbestos. Other regulated materials include mercury switches, thermostats, oils and liquids. Any suspect asbestos or regulated material discovered shall be reported to the Environmental Consultant and inspected prior to continuance of work. All regulated materials shall be removed by properly trained personnel. Contractor to coordinate.

4. For all demo work (haz or non-haz), contractor to perform all work practices using proper dust controls, personal safety/fall protection, housekeeping measures and waste handling in accordance with general Construction Safety Orders and safety regulations.

5. Contractor to coordinate and perform all scope of demo and new work according to all contract drawings and plans.

LEGEND

ABATEMENT KEYNOTES

ASBESTOS CONTAINING MATERIALS

- A1 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING ROOF MAIN FIELD MATERIALS (AND ANY MATERIALS IN SYSTEM) ACCORDING TO ALL CONTRACT DOCUMENTS
- A2 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING BLACK PENETRATION MASTIC (I.E. PIPE, VENT, MECH UNIT, ETC) ACCORDING TO ALL CONTRACT DOCUMENTS
- A3 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING GREY PENETRATION MASTIC (I.E PIPE, VENT, MECH UNIT, ETC) ACCORDING TO ALL CONTRACT DOCUMENTS
- A4 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING SILVER PENETRATION MASTIC (I.E PIPE, VENT, MECH UNIT, ETC) ACCORDING TO ALL CONTRACT DOCUMENTS
- A5 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING PARAPET OR FLASHING PERIMETER GREY AND BLACK MASTICS ACCORDING TO ALL CONTRACT DOCUMENTS
- A6 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING WHITE CONCRETE SUPPORT MASTICS ACCORDING TO ALL CONTRACT DOCUMENTS
- A7 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING PARAPET OR FLASHING MATERIALS ACCORDING TO ALL CONTRACT DOCUMENTS
- A8 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING VENT CAULKING MASTICS

LEAD-CONTAINING MATERIALS

- L1 REMOVE BEIGE METAL LADDER AND/OR STABILIZE LEAD-CONTAINING MATERIALS AND COMPONENTS ACCORDING TO ALL CONTRACT DOCUMENTS. ITEMS DETAILED HAVE BEEN FOUND TO CONTAIN CONCENTRATIONS OF LEAD ABOVE THE REPORTING LABORATORY LIMIT. ITEMS NOT SCHEDULED FOR RECYCLING SHALL BE CHARACTERIZED FOR PROPER WASTE DISPOSAL.
- L2 REMOVE ORANGE COUNTER TOPS AND/OR STABILIZE LEAD-CONTAINING MATERIALS AND COMPONENTS ACCORDING TO ALL CONTRACT DOCUMENTS. ITEMS DETAILED HAVE BEEN FOUND TO CONTAIN CONCENTRATIONS OF LEAD ABOVE THE REPORTING LABORATORY LIMIT. ITEMS NOT SCHEDULED FOR RECYCLING SHALL BE CHARACTERIZED FOR PROPER WASTE DISPOSAL.
- L3 REMOVE AND DISPOSE OF CERAMIC TILES AND ASSOCIATED COMPONENTS WITH LEAD-BASED PAINT COATINGS FOR THE PURPOSES OF RENOVATION, ACCORDING TO ALL CONTRACT DOCUMENTS.

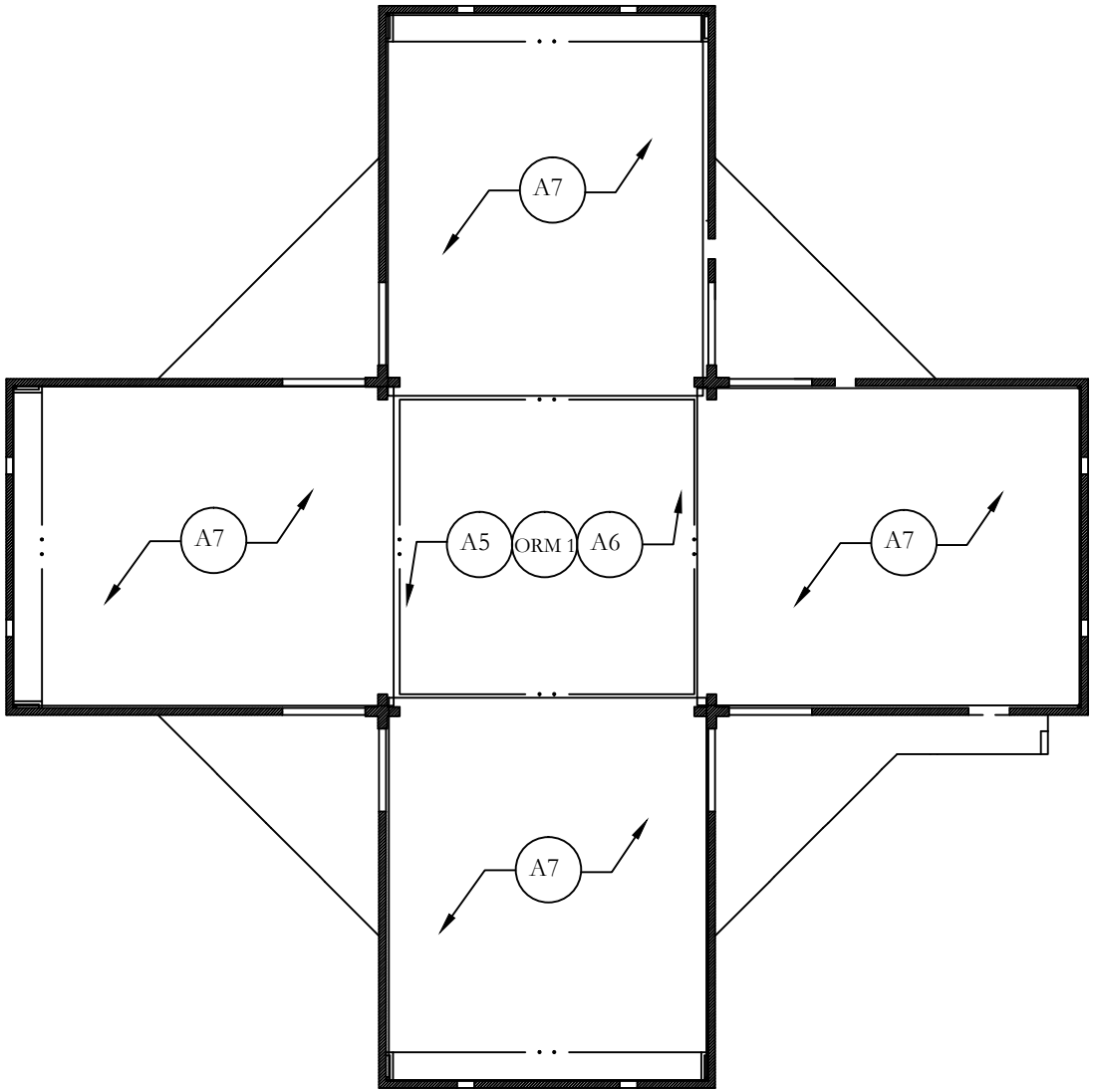
ORM- OTHER REGULATED MATERIALS

- ORM1 REMOVE AND DISPOSE/RECYCLE HVAC AND MECHANICAL UNITS; REGULATED MATERIALS (OILS, REFRIGERANTS, SWITCHES, THERMOSTATS, TRANSFORMERS, BATTERIES, ETC.)

EAST SIDE UNION HIGH SCHOOL DISTRICT

MILLENNIUM CONSULTING ASSOCIATES
OAKLAND, CA

SCALE: N.T.S.	FOR	BUILDING J- FIRST FLOOR EAST SIDE UNION HIGH SCHOOL DISTRICT 830 NORTH CAPITOL AVENUE SAN JOSE, CA 95133	
DATE: 3/16/17			
DRWN: BG	TITLE	DEMO PLAN- FIRST FLOOR	
CHECKED: LN			
APPROVED:	JOB NO. 5026.2000	DWG. NO.	HM-1



GENERAL HAZARDOUS MATERIALS SHEET NOTES- ESUSD-IH-Bldg J

1. All painted surfaces are considered as having lead-containing coatings. All work practices, including all SOFT AND HARD DEMOLITION, REMOVAL/INSTALLATION of MATERIALS and HOT WORK, on said coatings shall be performed in accordance with the Cal-OSHA Lead in Construction Standard (8 CCR 1532.1) and EPA RRP regulation (for LBP). Contractor to coordinate all work according to all contract drawings and plans.

2. All suspect lead-containing items with significant lead content (detailed on drawing) removed as a result of demolition and scheduled for disposal shall be characterized for proper waste profiling. Contractor to coordinate sample collection and analysis with Environmental Consultant.

3. Mechanical equipment located throughout the roofs may contain other regulated materials in addition to asbestos. Other regulated materials include mercury switches, thermostats, oils and liquids. Any suspect asbestos or regulated material discovered shall be reported to the Environmental Consultant and inspected prior to continuance of work. All regulated materials shall be removed by properly trained personnel. Contractor to coordinate.

4. For all demo work (haz or non-haz), contractor to perform all work practices using proper dust controls, personal safety/fall protection, housekeeping measures and waste handling in accordance with general Construction Safety Orders and safety regulations.

5. Contractor to coordinate and perform all scope of demo and new work according to all contract drawings and plans.

LEGEND

ABATEMENT KEYNOTES

ASBESTOS CONTAINING MATERIALS

A1 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING ROOF MAIN FIELD MATERIALS (AND ANY MATERIALS IN SYSTEM) ACCORDING TO ALL CONTRACT DOCUMENTS

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A3 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING GREY PENETRATION MASTIC (I.E PIPE, VENT, MECH UNIT, ETC) ACCORDING TO ALL CONTRACT DOCUMENTS

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A5 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING PARAPET OR FLASHING PERIMETER GREY AND BLACK MASTICS ACCORDING TO ALL CONTRACT DOCUMENTS

A6 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING WHITE CONCRETE SUPPORT MASTICS ACCORDING TO ALL CONTRACT DOCUMENTS

A7 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING PARAPET OR FLASHING MATERIALS ACCORDING TO ALL CONTRACT DOCUMENTS

A8 REMOVE AND DISPOSE OF ALL ASBESTOS-CONTAINING VENT CAULKING MASTICS (GREY/WHITE/BLACK) ACCORDING TO ALL CONTRACT DOCUMENTS

LEAD-CONTAINING MATERIALS

L1 REMOVE BEIGE METAL LADDER AND/OR STABILIZE LEAD-CONTAINING MATERIALS AND COMPONENTS ACCORDING TO ALL CONTRACT DOCUMENTS. ITEMS DETAILED HAVE BEEN FOUND TO CONTAIN CONCENTRATIONS OF LEAD ABOVE THE REPORTING LABORATORY LIMIT. ITEMS NOT SCHEDULED FOR RECYCLING SHALL BE CHARACTERIZED FOR PROPER WASTE DISPOSAL.

L2 REMOVE ORANGE COUNTER TOPS AND/OR STABILIZE LEAD-CONTAINING MATERIALS AND COMPONENTS ACCORDING TO ALL CONTRACT DOCUMENTS. ITEMS DETAILED HAVE BEEN FOUND TO CONTAIN CONCENTRATIONS OF LEAD ABOVE THE REPORTING LABORATORY LIMIT. ITEMS NOT SCHEDULED FOR RECYCLING SHALL BE CHARACTERIZED FOR PROPER WASTE DISPOSAL.

L3 REMOVE AND DISPOSE OF CERAMIC TILES AND ASSOCIATED COMPONENTS WITH LEAD-BASED PAINT COATINGS FOR THE PURPOSES OF RENOVATION, ACCORDING TO ALL CONTRACT DOCUMENTS.

ORM- OTHER REGULATED MATERIALS

ORM1 REMOVE AND DISPOSE/RECYCLE HVAC AND MECHANICAL UNITS; REGULATED MATERIALS (OILS, REFRIGERANTS, SWITCHES, THERMOSTATS, TRANSFORMERS, BATTERIES, ETC.)

EAST SIDE UNION HIGH SCHOOL DISTRICT

MILLENNIUM CONSULTING ASSOCIATES
OAKLAND, CA

SCALE: N.T.S.	FOR	BUILDING J- ROOF EAST SIDE UNION HIGH SCHOOL DISTRICT 830 NORTH CAPITOL AVENUE SAN JOSE, CA 95133	
DATE: 3/16/17			
DRWN: BG	TITLE	DEMO PLAN- ROOF	
CHECKED: LN			
APPROVED:	JOB NO. 5026.2000	DWG. NO.	HM-2