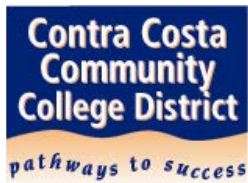


ADDENDUM #1



CONTRA COSTA COMMUNITY COLLEGE DISTRICT CONTRA COSTA COLLEGE C-1067 AA BUILDING CHILLER RETORIFT PLUS PUMPING VFDS

Date: August 5, 2016

NOTICE TO ALL CONTRACTORS:

You are hereby notified of the following changes, clarifications and/or modifications to the original Contract Documents, Project Manual, Drawings, Specifications and/or previous Addenda. This Addendum shall supersede the original Contract Documents and previous Addenda wherein it contradicts the same, and shall take precedence over anything to the contrary therein. All other conditions remain unchanged.

This Addendum forms a part of the Contract Documents and modifies the original Contract Documents dated **July 29, 2016**. Acknowledge receipt of this Addendum in space provided on the Bid Proposal Form. Failure to acknowledge may subject Bidder to disqualification.

MODIFICATIONS TO CONTRACT DOCUMENTS:

1. Add:
 - a. HM1.0 Chiller Room Hazardous Materials Plan
 - b. SECTION 02 82 00 ASBESTOS ABATEMENT AND DISPOSAL
 - c. SECTION 02 83 00 LEAD-CONTAINING PAINT REMOVAL AND LEAD-RELATED CONSTRUCTION

2. Delete Unsigned and Unstamped Versions of:
 - a. T.01 TITLE SHEET
 - b. M0.1 LEGEND AND SCHEDULES
 - c. M1.0 CHILLER ROOM DEMOLITION PLAN
 - d. M2.0 CHILLER YARD PLAN - NEW CONSTRUCTION
 - e. M3.1 CHILLED WATER PIPING DIAGRAMS
 - f. M4.1 DETAILS
 - g. M5.1 TITLE 24 DOCUMENTATION
 - h. M5.2 TITLE 24 DOCUMENTATION

ADDENDUM #1

3. Add Signed and Stamped Versions of:
 - a. T.01 TITLE SHEET
 - b. M0.1 LEGEND AND SCHEDULES
 - c. M1.0 CHILLER ROOM DEMOLITION PLAN
 - d. M2.0 CHILLER YARD PLAN - NEW CONSTRUCTION
 - e. M3.1 CHILLED WATER PIPING DIAGRAMS
 - f. M4.1 DETAILS
 - g. M5.1 TITLE 24 DOCUMENTATION
 - h. M5.2 TITLE 24 DOCUMENTATION
 4. Delete the section not referencing EADOC :
 - a. SECTION 01311 PROJECT MANAGEMENT AND COORDINATION
 5. Add this section referencing EADOC
 - a. SECTION 01311 PROJECT MANAGEMENT AND COORDINATION
-

If you have any questions regarding this Addendum, please contact:

Jovan Esprit, Contract Manager
Contra Costa Community College District
500 Court St., Martinez, CA 94553
Email: jesprit@4cd.edu

All other terms and conditions of BID are to remain the same.

END OF ADDENDUM #1

SECTION 01311

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY

- A. This Section specifies the administrative requirements and includes descriptions of required project coordination for the work including, but not limited to, the following:
 - 1. Coordination
 - 2. Coordination of Contract Closeout

1.3 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of Work, with provisions for accommodating items to be installed later and for accommodating items to be installed by other District contractors.
- B. Resolve differences or disputes concerning coordination, interference, or extent of Work of the various Sections of the Specifications.
- C. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
- D. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.
- E. Cooperate with District and District suppliers and/or contractors during move-in and occupancy of the completed Work.
- F. Contractor shall coordinate construction operations and means and method of construction included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Coordinate structural, mechanical, and electrical elements prior to installation. All penetrations of structural elements must first receive approval of Architect and District pursuant to the submittal process described in Section 00700, General Conditions. Rerouting of ductwork, piping, or conduit and resulting changes to other work caused by failure to coordinate beforehand is the responsibility of the Contractor and shall not be considered justification for either additional cost or time.
 - 2. Schedule construction operations in sequence required to obtain the best constructed results where installation of one part of the Work depends on installation of other components, before or after its own installation.

3. Coordinate installation of different components with other contractors or other trades to ensure maximum and appropriate accessibility for required maintenance, service, and repair. Where availability of space is limited, coordinate installation of different components to ensure maximum and appropriate performance and accessibility for required maintenance, service, operations, and repair of all components, and building systems.
4. Make adequate provisions to accommodate items scheduled for later installation.
5. The manner in which the Specifications are divided into Divisions and Sections is not intended to indicate division of work between trades nor indicate trade union or jurisdictional agreements.
 - a. Assign and subcontract construction activities, and employ workers in a manner that will not risk jurisdictional disputes that could result in conflicts, delays, claims, or losses.

1.4 ADMINISTRATIVE COORDINATION

- A. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work.
- B. Project Documents Management and Exchange
 1. The Contractor, District, IOR, and Architect shall mutually utilize an internet based system for the exchange and tracking of Project documents. The system to be utilized for this Project is EADOC, by Bentley Systems, Inc.
 2. The District will provide training for and access to the EADOC system for key Project team members, and will also pay the system usage fees.
 3. To the maximum extent feasible, document exchange between and among the Contractor, District, IOR, and Engineer shall occur electronically via the EADOC system. Such documents include, but are not limited to:
 - a. Product data and other submittals
 - b. ASI's, Field Directives, and similar documents
 - c. RFI's
 - d. Payment applications
 - e. Change Orders
 - f. Schedules
 - g. Correspondence
 - h. Other documents and deliverables as required by the Contract Documents.
 4. All Project documents entered into the EADOC system will be stored remotely at a secure Bentley Systems, Inc location.
 5. EADOC demonstration videos and screenshots can be found at the following link:
<http://eadocsoftware.com/demo/>

1.5 COORDINATION OF THE WORK

- A. Coordinate use of project space and sequence of installation of mechanical, electrical, structural, and other Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently for maximum and appropriate accessibility for other installations, for maintenance, service, operations, and for repairs.
- B. Contractor shall use large scale drawings, if their preparation is required as part of Work of these specifications, together with shop drawings if applicable and layout drawings of other affected sections of these specifications to check, to coordinate, and to integrate the Work of various sections to prevent interferences.
- C. Perform and complete checking and coordination before commencing construction in the affected areas.
- D. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of plumbing, fixtures, electrical fixtures, and fixtures and outlets with finish elements.

1.6 CONSERVATION

- A. Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections of the Specifications for disposition of salvaged materials that are designated as District's property.

1.7 MEANS AND METHODS

- A. Contractor is solely responsible for construction means, methods, techniques, sequences, and procedures for performing all Work.

1.8 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. Contractor shall provide other administrative and supervisory personnel as required for proper performance of the Work.
 - 1. Include specific or dedicated personnel required for coordination of operations with other contractors.

1.9 COORDINATION WITH WORK BY DISTRICT

- A. Coordinate service connections for District furnished and District installed equipment. Verify that service connections are correct sizes and in required locations.
- B. Coordinate support and anchorage for equipment furnished and installed by the District. Provide blocking and backing as shown or directed to facilitate installation of equipment by others.

1.10 PERIODIC VERIFIED REPORTS

- A. The Contractor shall complete and submit the Final Verified Report required by DSA when applicable. In addition to other conditions precedent to Final Payment, the Contractor's completion and submission of the Final Verified Report is an express condition precedent to the District's obligation to make the Final Payment. In addition to completion and submission of the Final Verified Report, as a material obligation under the Contract Documents, the Contractor shall comply all DSA requests for reports or other data relating to the Work, the status thereof or conformity of the Work to the Contract Documents.

PART 2 - PRODUCTS

1.11 EADOC Construction Management Software

- A. The Project will make use of the EADOC Construction Management Software. The system is a web-based user-interface that can be accessed by typical web-browsers. The District will provide training prior to the start of the Project.

PART 3 - EXECUTION - Not Used.

END OF SECTION 01311

SECTION 02 82 00

ASBESTOS ABATEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.
- B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT

- A. The Contractor is responsible for repair, to the satisfaction of the District, of surfaces not scheduled for demolition that become damaged as a result of the work. All unscheduled repair work shall be at no increase to contract price.
- B. Contractor shall coordinate removal with all site requirements related to protection of existing finishes. Water and encapsulants used during abatement work must not migrate beyond established regulated work area barriers. All protection work must be completed prior to the start of abatement work and any pathways of travel.
- C. This project deals with abatement of asbestos-containing materials (ACMs) associated with mechanical equipment replacements. It is necessary for the Contractor to coordinate all abatement work with the project drawings and specifications. During all work, provide monitoring and worker protective equipment in accordance with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this specification. Where there is conflict, the most stringent requirement shall apply.
- D. The work covered by this specification includes the handling, removal, and proper disposal of ACMs. All hazardous materials shall be removed and disposed of according to all federal, state and local regulations. The Contractor shall determine if additional hazardous materials will be impacted by the scope of the abatement work. The cleanup of any incidental asbestos found in areas undergoing abatement of asbestos that become separated from the building or mechanical equipment during the dismantling process are part of the work.
- E. The abatement workers shall have received Cal-OSHA accredited training and be certified for asbestos abatement work.
- F. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for asbestos abatement in accordance with this specification.
- G. Comply with all federal, state, and local regulations pertaining to asbestos removal, storage, transportation and disposal; employee health and safety; Contractor certifications; and all licenses, permits, and training.

- H. Work on the premises shall be confined to areas designated in the Contract Documents. Materials and equipment shall be stored within areas designated by the District. Should additional space be required, the Contractor shall request permission for additional space and shall adequately safeguard occupants from associated health and safety hazards.
- I. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to asbestos abatement, handling, and the subsequent cleaning of contaminated areas.
- J. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, sensitive building finishes, adjacent building areas, and shall ensure that there is no airborne release of dusts. The District may collect air samples in the building and in adjacent areas to evaluate the Contractor's performance. Evidence of settled dust or airborne levels of contaminants above background will require the implementation of additional controls at no increase to contract price.
- K. It is the Contractor's responsibility to determine the quantities of ACMs that will require removal prior to commencement of the project. The Contractor shall conduct a site visit to determine exact locations of materials that will require abatement. This section provides appropriate protocols for handling and disposal of ACMs. All ACMs shall be removed according to the procedures outlined in this specification. If additional suspect ACMs are discovered during the course of the abatement work, immediately notify the District and/or the District's Environmental Consultant.
- L. The work of this section shall be performed by an entity that holds a current, valid asbestos handling license issued by the California State Contractor's Licensing Board (SCLB) and a current valid Certificate of Registration for Asbestos-Related Work issued by the California Department of Industrial Relations-Division of Occupational Safety and Health (Cal-OSHA), unless otherwise specified. Display copies of CSLB license and Cal-OSHA Registration in a visible place at the job-site.
- M. ACMs removed during the abatement activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the District thereby limiting the District's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose. The District or the District's Environmental Consultant shall approve the non-ACM hazardous waste disposal site(s) prior to disposal for materials that may be disposed of in that manner.
- N. All interior asbestos abatement work shall be conducted using a negative pressure enclosure unless otherwise specified.

1.3 DEFINITIONS

A. The following definitions pertain to work of this section.

1. Abatement: Process of controlling fiber release from ACMs including encapsulation, enclosure, controlled renovation procedures, removal, clean-up and disposal.
2. ACM: Asbestos-containing material
3. Aggressive Sampling: Air sampling either during or following the agitation of the air.
4. AHERA: Asbestos Hazard Emergency Response Act (40 CFR Part 763).
5. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and uncontaminated areas. Typically consists of two curtained or gasketed doorways separated by a distance of at least six feet such that one passes through one doorway into the airlock, allowing the doorway to close off the opening. This airlock must be maintained in uncontaminated condition at all times.
6. Ambient Air Quality: The quality of air (in terms of airborne fiber content) that is present in a given space.
7. Area Monitoring: Sampling of airborne asbestos fiber concentrations within the work area and outside the work area. Sampling shall represent airborne concentrations that may reach the breathing zone.
8. Asbestos Fibers: Refers to asbestos fibers having an aspect ratio of 3:1, and those fibers longer than five (5) microns.
9. Asbestos Permissible Exposure Limit (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.
10. Asbestos-Containing Material (ACM): Those manufactured products and construction materials including structural and mechanical building materials, as well as packings and gaskets that contain more than one percent (1.0%) asbestos by weight.
11. Asbestos: Asbestos includes asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-gunerite (amosite), anthophyllite, tremolite, and actinolite. For the purposes of determining worker respiratory protection, both the asbestiform and non-asbestiform of the above minerals, and any chemically treated or altered materials shall be considered as asbestos.
12. Authorized Visitor: Designated employees or consultants for the District and representatives of any federal, state or local regulatory or other agency having jurisdiction over the project.
13. Baseline: Refers to the background levels of asbestos monitored before abatement.

14. Breathing Zone: A hemisphere forward of the shoulders and head with a radius of approximately six to nine inches.
15. Breach: A rift or gap in the critical or secondary barriers that allow egress of air from the containment to outside, or vice versa.
16. Bridging Encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.
17. Cal-OSHA: State of California, Occupational Safety & Health Administration.
18. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample(s) from the moment it is collected, transported, analyzed, and ultimately stored in an archive.
19. Change Rooms: Refers to the two chambers in the decontamination area used to change into and out of protective clothing.
20. Certified Industrial Hygienist (CIH): A person certified by the American Board of Industrial Hygiene.
21. Clean Room: An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.
22. Clearance Level: Clearance level for samples analyzed by PCM will be less than 0.01 fibers per cubic centimeter of air and for TEM will be less than 70 structures per square millimeter (<70 s/mm²). Samples may be collected by aggressive or non-aggressive sampling methods and the minimum air volume shall be 1,200 liters.
23. Competent Person: One who is capable of identifying existing and predictable hazards and who has the authority to take prompt corrective measures to eliminate them.
24. Critical Barrier: A unit of temporary construction that provides the only separation between asbestos work area and an adjacent potential occupied space. This includes the decontamination unit, perimeter walls, ceilings, penetrations and any temporary critical barriers between the work area and the uncontaminated environment.
25. CSLB: Contractors State Licensing Board
26. Decontamination Area: Area which is constructed to provide the means for workers to store clothing, equipment and other articles, and to properly remove contamination upon concluding work activities that result in exposure to these hazardous materials.
27. DOP: Dioctylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.
28. DOT: Federal Department of Transportation.
29. DOSH: Division of Occupational Safety & Health (see also Cal-OSHA)
30. Decontamination Unit: Refers to system of airlocks used to decontaminate personnel, waste bags, equipment, etc. when exiting the work area. A decontamination unit shall be set up for each containment area.

31. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
32. Disposal Bag: Minimum six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from a work area to disposal or shipping container. Each disposal bag must have required labels according to Title 8 CCR 1529 (Cal-OSHA asbestos rule), 5194 (HAZCOM). RACM waste must be additionally labeled according to 49 CFR 171-179 (USDOT), and 40 CFR 61 Subpart M (NESHAP). Hazardous waste disposal bags must be labeled with generator's name, address, site location, generator number, and the following information:

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

33. District: Contra Costa Community College District
34. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's asbestos abatement work activities.
35. Encapsulant: A liquid material that can be applied to ACMs that controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging) or by penetrating into the material and binding its components together (penetrating encapsulant).
36. Encapsulation: A specified procedure necessary to coat ACMs or asbestos contaminated surfaces with an encapsulant to control the possible release of asbestos fibers into the ambient air.
37. Enclosure: The construction of an airtight, impermeable, permanent barrier surrounding the ACM to prevent the release of asbestos fibers into the air.
38. Equipment Decontamination Enclosure System: A decontamination enclosure system for materials and equipment, typically in a designated area of the work area, and including a washroom, a holding area, and an uncontaminated area.
39. Equipment Room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment. The equipment room shall be kept clean from asbestos-containing debris at all times.
40. Excursion Limit: A California Code of Regulations (Title 8 CCR 1529) requirement that ensures no employee exposed to airborne concentrations of asbestos in excess of 1.0 fibers per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.
41. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

42. Fixed Object: A unit of equipment or furniture in the work area that cannot be removed from the work area.
43. Friable Asbestos-Containing Material: Material that contains more than 1.0% asbestos by weight, and that can be crumbled, pulverized or reduced to powder by hand pressure when dry.
44. Foreman: An individual who typically fulfills the duties of “competent person” as defined by Title 8 CCR 1529. This individual must supply documentation of a passing grade in a Cal-OSHA accredited course in Asbestos Contractor/Supervisor training. The foreman must be on-site during all abatement work.
45. Glove Bag: A polyethylene bag with two inward projecting long sleeve gloves, designed to enclose an object from which an ACM is to be removed. Bags shall be seamless at the bottom, have a minimum thickness of 6 mil, and shall be labeled appropriately.
46. Glove Bag Technique: A method for removing ACM from heating, ventilation and air conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other non-planar surfaces. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. Secondary containment shall be provided for all glove bag work unless otherwise noted.
47. Gross or Full Abatement: Designated rooms, spaces, or areas of the project that have been totally sealed, contained in polyethylene, equipped with decontamination enclosure systems, and placed under negative pressure.
48. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.
49. Manifest: The document authorized by both Federal and State authorities for tracking the movement of ACMs.
50. Movable Object: A unit of equipment or furniture in the work area that can be removed from the work area (e.g., smoke detectors, lights, etc.)
51. 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.
52. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).
53. NESHAP: National Emission Standard for Hazardous Air Pollutants – EPA Regulation 40 CFR Subpart M, Part 61.
54. NIOSH: National Institute for Occupational Safety and Health: Sets test standards, analytical methods, and certifies performance of various respirator designs (research institute within Federal OSHA).
55. NIST: National Institute of Standards and Technology: Administers the NVLAP Program.
56. NOA – Naturally Occurring Asbestos. Found in soil and fill.

57. NVLAP: National Voluntary Laboratory Accreditation Program – evaluates and certifies laboratories doing PLM and TEM analyses.
58. Passive Sampling: Refers to air sampling with no air agitation.
59. Permissible Exposure Limits (PEL): A level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos. This level represents the 8-hour time-weighted average of 0.1 fibers per cubic centimeter of air and 30 minute excursion limit of 1.0 fibers per cubic centimeter of air as measured by Phase Contrast Microscopy (PCM) analytical method.
60. Phase Contrast Microscopy (PCM): Technique using a light microscope equipped to provide enhanced contrast between the fibers and the background. Filters are cleared with a chemical solution and viewed through the microscope at a magnification of approximately 400X. This method does not distinguish between fiber types and only counts those fibers longer than 5 microns and wider than approximately 0.25 microns. Because of these limitations, fiber counts by PCM typically provide only an index of the total concentration of airborne asbestos in the environment monitored.
61. Polarized Light Microscopy (PLM): An optical microscope technique used to identify asbestos content and distinguish between different types of asbestos fibers by their shape and unique optical properties.
62. Powered Air Purifying Respirator (PAPR): A full facepiece respirator that has the breathing air powered to the wearer after it has been purified through a filter.
63. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
64. Remodel: Replacement or improvement of an existing building or portion thereof where exposure to airborne asbestos may result. Remodel includes, but is not limited to, installation of materials, demolition, cutting, patching, and removal of building materials.
65. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
66. Shower Room: A room between the clean room and the equipment room in the work decontamination enclosure system. This room contains hot and cold or warm running water and soap suitably arranged for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas.
67. Surfactant: A chemical wetting agent added to water to improve penetration, this reducing the quantity of water required for a given operation or area.
68. Transmission Electron Microscopy (TEM): Asbestos structure analysis for a specified volume of air. TEM is a technique that focuses an electron beam onto a thin sample. As the beams transmits through certain areas of the sample, an image resulting from varying densities of the sample is projected onto a fluorescent screen. TEM is the state-of-the-art analytical method for

identifying asbestos fibers collected in air samples in non-industrial settings. TEM microscopes equipped with selected area electron diffraction (SAED) capabilities also can provide information on the crystal structure of an individual particle.

69. TSI – Thermal Systems Insulation
70. Visible Emissions: Any emission containing particulate material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
71. Visual Inspection: A visual inspection by District’s Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible PCB material, debris, and dust.
72. Washroom: A room between the work area and the holding area in the equipment decontamination enclosure system equipped with water for decontamination of equipment and sealed waste containers. The washroom or shower room comprises one airlock.
73. Water Filtration: Refers to water filtration to as small a particulate size as technically feasible, but not more than 5 microns.
74. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, HEPA vacuuming, or other cleaning utensils dampened with amended water and afterward thoroughly decontaminated or disposed of as asbestos contaminated waste.
75. Work Area: The area where asbestos removal is performed and that is defined or isolated to prevent the spread of asbestos fibers, dust or debris, and entry by unauthorized personnel. Work area is a regulated area as defined by Title 8 CCR 1529.

1.4 SCOPE OF WORK

- A. Provide the removal of ACMs as specified in this section. Reference all other sections of the Specifications and other documents included in the contract documents for information and requirements that affect the work of this Section.
- B. Table 1 attached provides estimated quantities of ACMs that will require removal and/or will be disturbed by the required mechanical replacement work. A 10% variance of quantity of actual ACM and estimated ACM in Table I is not considered a changed condition. The Contractor is responsible for field verifying quantities of ACMs to be abated and/or disturbed.
- C. The following materials shall be disposed of as regulated asbestos-containing material (RACM): All Category I and Category II materials rendered friable during the removal process.
- D. The following materials can be disposed of as Category II Non-friable ACMs if they are not rendered friable during removal: Pipe insulation sealants, cooling tower seam sealants.
- E. The following materials can be disposed of as Category I Non-Friable ACMs if they are not rendered friable during removal: mechanical flange gaskets.

1.5 REFERENCES

The publications listed below form a part of this specification by reference. The publications are referred to in the text by basic designation only. If there is a conflict between any of the listed regulations or standards, then the most stringent or restrictive shall apply.

- A. American National Standards Institute (ANSI) and American Society for Testing and Materials (ASTM)
 - 1. ANSI Z9.2, 1979 (R 1991), Fundamentals Governing the Design and Operation of Local Exhaust Systems
 - 2. ANSI Z87.1, 2003, Occupational and Educational Eye and Face Protection
 - 3. ANSI Z88.2 1992, Respiratory Protection
 - 4. ANSI Z89.1, 1986, Requirements for Protective Headgear for Industrial Workers
 - 5. ANSI Z41, 1999, Personal Protection – Protective Footwear
 - 6. ANSI Z88.6, 1984, Respiratory Protection – Respiratory Use Physical Qualifications for Personnel
 - 7. ASTM C 732, 1982 (R 1987) Aging Effects of Artificial Weathering on Latex Sealants
 - 8. ASTM D 522, 1993 (Rev. A) Mandrel Bend Test of Attached Organic Coatings
 - 9. ASTM D 1331, Solutions of Surface-Active Agents
 - 10. ASTM D 2794, 1993 Resistance of Coatings to the Effects of Rapid Deformation (Impact)
 - 11. ASTM E 84, 1991 (Rev. A) Surface Burning Characteristics of Building Materials
 - 12. ASTM E 96, 1994 Water Vapor Transmission of Materials
 - 13. ASTM E 119, 1988 Fire Tests of Building Construction and Materials
 - 14. ASTM E 736, 1992 Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
 - 15. ASTM E849, 1986 Safety and Health Requirement Relating to Occupational Exposure to Asbestos
 - 16. ASTM E 1368, 1990 Visual Inspection of Asbestos Abatement Projects
 - 17. ASTM E1494, 1992 Specifications for Encapsulants for Friable Asbestos-Containing Building Materials
- B. California Assembly Bills (CAB)
 - 1. CAB 040, Yearly Registration of Contractors
- C. California Code of Regulations (CCR)
 - 1. Title 8 CCR 5208, General Industry – Asbestos
 - 2. CCR CARS, Carcinogen and Asbestos Registration Sections 340-344.53, 341.6 Amended, and 341.9 Amended Through 341.14
 - 3. CCR ESO, Electrical Safety Orders, Chapter 4, Subchapter 5

4. CCR 1523, Illumination
 5. CCR 1529, Asbestos in the Construction Industry
 6. CCR 1531, Construction Respiratory Protective Equipment
 7. CCR 3203, Injury and Illness Prevention Program
 8. CCR 3204, Access to Employee Exposure and Medical Records
 9. CCR 3220, Emergency Action Plan
 10. CCR 3221, Fire Prevention Plan
 11. CCR 5144, Respiratory Protection Equipment Standard
 12. CCR 5194, Hazard Communication Standard
 13. CCR 6003, Accident Prevention Signs
 14. Title 22, Division 4, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste
- D. California Health Services (CHS) Titles 22 and 23, California Administrative Code Disposal Requirements
1. CHS 25123, Section 25123
 2. CHS 25124, Section 25124
 3. CHS 25143, Section 25143
 4. CHS 25163, Section 25163
 5. CHS 66508, Section 66508
 6. CHS 66510, Section 66510
 7. CHS DIV 4, Division 4, Commencing with Section 66000, "Disposal"
- E. California Health and Safety Code (CHSC)
1. CHSC 20, Division 20, Commencing with Section 24200
- F. California Labor Code (CLC)
1. CLC DIVISION 5, Part 1, commencing with 6300
- G. California Propositions (CP)
1. CP 65, Proposition 65
- H. California State Board of Equalization (CSBE)
1. CSBE ETU, Excise Tax Unit
- I. California State License Board (CSLB)
1. CSLB CBPC, California Business and Professional Code Sections 7058.5 and 7058.7, "Certification"
- J. Code of Federal Regulations (CFR)
1. 29 CFR 1910.134, Respiratory Protection
 2. 29 CFR 1910.141, Sanitation
 3. 29 CFR 1910.145, Accident Prevention Signs and Tags

4. 29 CFR 1926.21, Safety Training and Education
 5. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists
 6. 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response
 7. 29 CFR 1926.59, Hazard Communication
 8. 29 CFR 1910.1000, Air Contaminants
 9. 29 CFR 1926.1101, Asbestos
 10. 40 CFR 61-SUBPART A, General Provisions
 11. 40 CFR 61-SUBPART M, National Emission Standard for Asbestos
 12. 40 CFR 260, Hazardous Waste Management Systems: General
 13. 40 CFR 745, Lead; Requirements for Lead-Based Paint Activities
 14. 40 CFR 763, Asbestos Containing Material in Schools
- K. State and Local Regulations
1. Regulation 11, Rule 2 , Bay Area Air Quality Management District (BAAQMD)
- L. Underwriters Laboratories, Inc. (UL)
1. UL 586-96, 1996 Test Performance of High-Efficiency Particulate Air Filter Units

1.6 SUBMITTALS PRIOR TO START OF WORK

- A. The reviews by the District or District's Environmental Consultant are intended to be only for general conformance with the requirements. The District or District's Environmental Consultant assumes no responsibility for permits, licenses, notices, materials and methods, equipment or temporary construction required to execute the work described in this Section of the Specification or in other Sections of the Specification or in other documents included in the contract documents.
- B. Before commencing work involving the abatement or disturbance of asbestos, submit the following for review by the District or District's Environmental Consultant.
1. Provide a detailed asbestos abatement work plan that follows Attachment A – Asbestos Abatement Work Plan Outline.
 2. Provide an asbestos site safety plan prior to project initiation. The site safety plan shall deal with, at a minimum: site safety and health hazards; fiber release incidents; control of water leakage or discharge within and/or from the work area; medical emergency; asbestos handling procedures; fall protection; electrical safety; Contractor's internal administrative and inspection procedures; earthquakes and/or fire emergency procedures; protocol for responding to complaints or questions from interested parties; 24-hour emergency telephone numbers for company officers with authority to respond to emergencies.
 3. Competent Person (as defined by Title 8 CCR 1529): Demonstrate education and specialized training with successful completion of examination of a Cal-OSHA accredited asbestos training course.
 4. Workers: Demonstrate education and specialized training with successful completion of a Cal-OSHA accredited asbestos training course.

5. Submit current certificates (less than 11 months) signed by each employee and trainer that the employee has received proper training in the handling of materials that contain asbestos. Include documentation showing that the worker understands the following; health implications and risks involved (including the illnesses possible from exposure to airborne asbestos fibers), the use and limits of the respiratory equipment to be used, and the results of monitoring of airborne quantities of asbestos concerning health and respiratory equipment.
6. Proof of Respirator Fit Testing: Provide proof of respirator fit testing. Fit testing records must be less than eleven (11) months old and document testing on the type of respiratory protective equipment used for this project. Fit testing records must be signed by the Competent Person.
7. Foreman Training: Submit evidence that the foreman to be used on the job fulfills the qualifications detailed in this specification and has experience in similar jobs.
8. Medical Examinations: Submit evidence signed by a physician that each employee used on the job has received an appropriate medical examination as detailed in Title 8 CCR 1529. The submitted document must be less than eleven (11) months old.
9. Rental Equipment: When rental equipment is to be used in the abatement areas or to transport hazardous waste, the Contractor shall provide written notification regarding intended use of the rental equipment to the rental agency before use, with copies to the District's Environmental Consultant.
10. Certificates of Compliance: Submit manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne asbestos fibers conform to ANSI Z9.2. Submit results of onsite DOP testing of all HEPA-filtered ventilation equipment.
11. Submit uniform hazardous waste manifests prepared, signed and dated by an agent of the landfill. The manifest must certify the amount of hazardous materials delivered to the landfill. The manifest must be provided to the District or District's Environmental Consultant within ten working days after delivery.
12. Satisfactory proof that written notification and subsequent updates have been provided to the Bay Area Air Quality Management District (BAAQMD), in accordance with Regulation 11, Rule 2, Cal-OSHA, and Title 40 CFR Part 61 Subparts A&M, National Emission Standards for hazardous Air Pollutant, U.S. EPA for friable removals exceeding notification quantities.
13. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.
14. Notification of Other Contractors: If other contractors are working at the job site, before beginning any work the Contractor must inform all other contractors in writing regarding the location, nature, and requirements of the work areas.
15. Material Safety Data Sheets/Specification Sheets: The Contractor shall submit Material Safety Data and Specification Sheets for all chemicals, encapsulants, etc. to be used for this project.

1.7 SUBMITTALS AT THE COMPLETION OF THE PROJECT

- A. Upon completion of on-site work, Contractor shall provide a detailed project summary that will include each of the items listed below. The project Summary shall be submitted and approved by the District prior to acceptance of final pay request and shall include the following:
1. Copies of the Security and Safety Logs showing names of persons entering the workspace. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident).
 2. Chain of custody documentation and laboratory reports for all analyses performed.
 3. Emergency evacuations and any other safety or health incident.
 4. Submit uniform hazardous and non-hazardous waste manifests prepared, signed and dated by an agent of the landfill. The manifest must certify the amount of hazardous materials delivered to the landfill. The manifest must be provided to the District or District's Environmental Consultant within ten working days after delivery.
 5. Personal air sample results.
 6. Project Summary:
 - a. Abatement contractor's name and address, certification number (CSLB), registration number (DOSH) and Tax ID number.
 - b. Hazardous waste hauler certifications (DHS, DOT).
 - c. Name, address and registration number of hazardous waste hauler.
 - d. Laboratory performing analyses (NVLAP).
 - e. Contract number and name of project.
 - f. Specific inventory (including locations and approximate quantities) of the hazardous materials which were removed or handled.
 - g. Number of employees working on the project.
 - h. Dates of commencement and completion of on-site work.
 - i. Work method employed (i.e., glove bag, mini-containment, full containment with negative air and decontamination enclosure system, etc.)
 - j. Name, location, telephone number and EPA registration of waste disposal site(s) used.
 - k. DOP testing results.

1.8 CONTRACTOR MONITORING

- A. The District or District's Environmental Consultant reserves the right to perform air sampling in selected areas during the course of the project. District or District's Environmental Consultant reserves the right to stop work within in an area if in the course of performing monitoring, the District or District's Environmental Consultant observes instances of substantial non-conformance with the this Section or other Sections of the Specification presenting health hazards to workers, the general public or the surrounding areas. Work shall not resume until the corrective measures

have been enforced. Instances of substantial non-conformance shall include, but not be limited to, the following:

1. Activities or misconduct imperiling worker's safety and health.
 2. Airborne fiber concentrations as measured by PCM outside of the containment area exceeding background or 0.01f/cc whichever is greater. Airborne concentrations as measured by TEM outside of the containment area exceeding background or 70 S/mm², whichever is greater.
 3. Loss of negative pressurization for more than two minutes.
 4. Breaches in containment resulting in potential release of asbestos to non-work areas.
- B. The District's Environmental Consultant may perform air sampling inside and outside the hazardous materials work area during all phases of the work. The Contractor shall cooperate fully with the District's Environmental Consultant and ensure the cooperation of his workers during collection of air samples and work area inspections.
- C. When visual inspections or air monitoring are specified, the Contractor shall notify the District or District's Environmental Consultant in writing 24 hours in advance of the day and time when the Contractor will be ready for such inspections or monitoring. Such requests shall be initiated by the Contractor's Competent Person or Foreman indicating that the work area has been previously inspected and is ready for inspection/testing.
- D. Air monitoring generated by the District or District's Environmental Consultant shall not be used by the Contractor to represent compliance with regulatory agency requirements for monitoring of workers exposure to airborne asbestos, nor shall any other activity on the part of the District or District's Environmental Consultant be construed to meet the Contractor's compliance with applicable health and safety regulations.

PART 2 - PRODUCTS

2.1 SIGNS AND LABELS:

- A. Provide labeling in accordance with State and Federal EPA requirements. Provide the required signs, labels, warnings, placards or posted instructions for containers used to transport hazardous material to the landfill.
- B. Location of Caution Signs and Labels: Provide bilingual caution signs at all approaches to work areas in languages used by the Contractor's employees. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos-containing materials, scrap, waste, debris, and other products contaminated with hazardous materials.
- C. Warning Sign Format: Vertical format conforming to Title 8 CCR 1529:

DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA

- D. Warning Label Format: Provide labels that comply with Title 8 CCR 1529 of sufficient size to be clearly legible, displaying the following:

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

2.2 ENCAPSULANTS

- A. Encapsulants shall be U.L. Listed, in full-scale E-119 fire test.
- B. Average depth of penetration shall meet manufacturer's recommendations.
- C. Dry mil thickness of bridging encapsulating systems (if used) shall be as indicated in the specific treatment instructions included in this specification, and as recommended by the manufacturer.
- D. Performance Requirements: Classification - penetrating encapsulant; spray applied and brushable. Product shall be tested and listed by EPA and possess the following characteristics:
1. Flame resistance/flame spread ~25 (ASTM E162) V6.
 2. Fire classification - UL Class A approved in the specific or similar assembly to its intended application.
 3. Product shall be tested and rated non-toxic and non-irritating under the Federal Hazardous Substances Control Act and contain no methylene chloride.
 4. Material shall be tinted sufficiently to provide a readable contrast to background color to which it is applied.

2.3 PLASTIC SHEETING:

- A. Use fire-retardant (FR) polyethylene (poly) film.
1. Thickness - 6-mil, minimum, NO EXCEPTIONS.
 2. Flame Resistance/Flame Spread Rate <25.
 3. Conforms to NFPA #701 and Tested in accordance with ASTM E-84.

2.4 TAPE, ADHESIVE, SEALANTS:

- A. Tape, 2" or wider, shall be capable of sealing joints of adjacent sheet of polyethylene and shall attach polyethylene sheet to finished or unfinished surfaces or similar materials. Tape shall be capable of adhering under dry and wet conditions, including use of amended water. Taping to critical or sensitive surfaces shall be completed using preservation sealing tape.
- B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.
- C. Fire resistant sealants shall be compatible with concrete, metals, wood, etc. Sealant shall prevent fire, smoke, water and toxic fumes from penetrating. Sealant shall have a flame spread, smoke and fuel contribution of zero, and shall be ASTM and UL rated for 3 hours for standard method of fire test for fire stop systems.

2.5 STRIP CHART RECORDER(S):

- A. Where interior work areas are required, each shall have a minimum differential pressure of 0.025 inches water gauge at all times. Fluctuations below 0.025 inches of water column are unacceptable and may require temporary cessation of work until conditions are corrected.
- B. Multiple data recorder(s) shall be used to document the level of pressure difference between the containment space and all other spaces as deemed necessary by the District or District's Environmental Consultant. Defective or non-operating instrumentation may require temporary cessation of work until instrumentation is repaired or replaced.
- C. The data recorder will be checked a minimum of four times per day by a person familiar with the operation. Each check shall be documented with a time and date notation and the initials of the person performing the check. A copy of the data shall be submitted daily to the District or District's Environmental Consultant.
- D. Differential air pressure systems shall be in accordance with Appendix J of EPA's "Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024. The Differential pressure system shall be continuously monitored by the Contractor using a recording instrument. The recording instrument shall be connected to an audible alarm that will activate at a pressure differential of -0.025 inches water gauge air pressure.

2.6 VACUUM EQUIPMENT:

- A. All vacuum equipment used in the work area shall use HEPA filtration systems and be of the wet-dry type. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the vacuum units. The test results shall be signed by the individual performing the testing. Repeat DOP testing every thirty (30) days after initial testing. Provide documentation to the District or District's Environmental Consultant with 24 hours of DOP testing.

2.7 LOCAL EXHAUST SYSTEM:

- A. Where containments are required, sufficient High Efficiency Particulate Absolute (HEPA) ventilation units shall be used to maintain the negative pressure in each interior work area at 0.025 inches of water column and a minimum of four (4) air changes per hour.
- B. The ventilation system shall remain in operation 24 hours a day until the work area has passed the specified clearance criteria. HEPA filtered air which is exhausted to maintain negative pressure shall be exhausted from the building at locations approved by the District or District's Environmental Consultant. Exhausted air shall not be near or adjacent to other building intake vents or louvers or at entrances to buildings. Other HEPA units shall operate within the enclosure to circulate air and control fiber counts.
- C. The Contractor shall provide on-site independent DOP testing to document the effectiveness of the air filtration units. The test results shall be signed by the individual performing the testing. Repeat testing if the unit or the air filtration units have been repaired or replaced. Repeat DOP testing after thirty (30) days after initial testing. Provide documentation to the District or District's Environmental Consultant with 24 hours of DOP testing.

2.8 RESERVE EQUIPMENT:

- A. Contractor shall have the following equipment on site: two reserve, functioning and DOP-tested HEPA Filter Vacuum Cleaning Units, two reserve and DOP-tested HEPA area filtration units for every four containments. Contractor shall also have sufficient polyethylene (poly), respirators, protective equipment, tape, tools, decontamination enclosure systems for each work area.
- B. Provide authorized visitors requiring access to the work area with suitable protective clothing, headgear, eye protection, as described in this specification, whenever the visitor must enter the work area. The Contractor shall have available and maintain at all times a minimum of three (3) suits and other suitable protective equipment for this purpose. All protective equipment shall be new and for the exclusive use of visitors.
- C. The Contractor shall document that each visitor has been trained and fit-tested prior to entering an abatement area.

2.9 SCAFFOLDING:

- A. Scaffolding, as required to do the specified work, shall meet all applicable safety regulations and DOSH standards. A non-skid surface shall be furnished on all scaffold surfaces subject to foot traffic. Contractor must comply with District's and General Contractor's Fall Protection Requirements. Scaffolding shall be adequately protected to prevent contamination of planking and framing.

2.10 TRANSPORTATION EQUIPMENT:

- A. Transportation equipment, as required, shall be lockable and suitable for loading, temporary storage, transit and unloading of contaminated waste without exposure to

persons or property. Any vehicle used to transport asbestos waste shall be properly registered with all applicable controlling agencies.

2.11 CONNECTIONS TO WATER SUPPLY:

- A. Contractor shall assure that all connections to the site's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water shall not damage existing finishes or equipment.
- B. Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system in each work area. Provide fittings as required to allow for connection to existing wall hydrants or spouts.

2.12 OTHER TOOLS AND EQUIPMENT:

- A. The Contractor shall provide other suitable tools for the stripping, removal and disposal activities.
- B. Prohibited Equipment: The following equipment is prohibited from use on this project unless accepted in writing by the District or District's Environmental Consultant:
 - 1. High or low pressure water blasting equipment for hosing of work areas.
 - 2. Bead blasting or other uncontained abrasive blasting methods.
 - 3. Vacuum-powered removal or collection equipment located outside the asbestos work area, such as a "Vacu-Loader".
 - 4. Gasoline, propane, diesel or other fuel powered equipment inside the building, unless previously approved in writing by the District or District's Environmental Consultant.
 - 5. Equipment that creates excessive noise or vibration that would affect the safety of the building or generate complaints from neighboring building occupants. No equipment shall exceed an A-weighted sound level of 85 dB as measured at 3 ft. from the radiating source without written permission of the District or District's Environmental Consultant.
 - 6. Metal wire-brushes.
 - 7. Flammable solvents with a flash point below 140 degrees F or materials containing ethylene glycol ether, methylene chloride, ethyl chloroform (1,1,1-trichloroethane), or other hazardous substances.
 - 8. Non-fire retardant polyethylene sheeting.
 - 9. Polyurethane spray foam for application in fire-rated assemblies, including but not limited to penetrations into stairwells, mechanical rooms, electrical closets, rated floor-to-floor assemblies, etc.

PART 3 - EXECUTION

3.1 INITIAL AREA ISOLATION

- A. The District or District's Environmental Consultant reserves the right to inspect and approve all containment setups before any abatement is undertaken.
- B. If a containment area is breached (failure of polyethylene seals, visible dust emission, fiber counts above background level, etc.), the Contractor shall take immediate action to control the breach and clean the area to the satisfaction of the District or District's Environmental Consultant.
- C. If sample results indicate that conditions have exceeded the baseline or clearance criteria, as determined by the District or District's Environmental Consultant, all work shall cease. Work shall not recommence until the condition(s) causing the increase have been corrected.
- D. Verify that all electrical power, gas, sewage, water, phone lines, fire life safety lines and sprinkler systems to the work area have been shut down and disconnected so that there is no possibility of reactivation and electrical shock.
- E. Provide all connections for temporary utilities in the work area needed throughout abatement. Temporary electrical power shall be according to OSHA and the National Electrical Code for Wet Environments.
- F. Contractor shall conform to the District's lockout requirements, and secure the work area at all times. Area entrances and exits shall be secured by the Contractor throughout the abatement phase. Unauthorized visitors are strictly prohibited. Only the Contractor, District or District's designative representatives are permitted at the job site. Contractor shall ensure that all doors, gates, windows, and potential entrances to the work areas and the designated waste location areas are secured and locked at the end of each workday.
- G. Contractor shall store all materials, equipment, and supplies for the project inside the building or in areas designated by the District and in accordance with District's requirements.
- H. Provide signs around the perimeter of all the interior works areas according to EPA and Cal-OSHA.
- I. Contractor shall provide temporary sanitary services of adequate capacity to handle the maximum estimated crew size plus an additional twenty percent. Contractor shall maintain the temporary facilities throughout the duration of the project.
- J. The Contractor shall be responsible for identifying all HVAC components (if applicable) that lead into or out of the work areas. All components shall be disconnected and sealed airtight for the duration of the abatement work. All openings shall be sealed with two (2) layers of 6 mil polyethylene secured with duct tape, as applicable.

- K. Pre-clean the work area and fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning methods. Protect fixed objects with protective barriers (as appropriate) and cover with 6 mil poly sealed with tape.

3.2 CONTAINMENT SET-UP PROCEDURES

- A. Contractor shall construct critical barrier negative pressure containment(s) for the removal of cooling tower seam sealants, flange gaskets, and pipe insulation sealants. The work area(s) shall be placed under negative pressure as outlined in this specification throughout the abatement work period.
- B. Containment is not required for the exterior, non-friable removal of the cooling tower sealants if the ACM sealants are not disturbed during dismantlement. All exterior asbestos abatement not conducted in containment shall be completed in a regulated area demarcated with asbestos warning signs and tape and 6-mil poly drop sheets sufficient in size to capture fallen debris.
- C. To permit the inspector to view the majority of the work area, the Contractor shall provide easily accessible viewing ports from the clean space into each abatement area. Viewing ports must be a minimum of 2' x 2', clear-see-through plastic with no scratches, tape or glue marks.
- D. Pressure differential data recorders are required to monitor the pressure differential in the work area. The recorders must be calibrated prior to arriving on site and shall be recalibrated monthly throughout the project. Recalibration shall be performed by qualified technicians following the procedures outlined by the manufacturers. Provide documentation of calibration before beginning work and monthly thereafter.
- E. A two-chamber decontamination unit may be allowed, unless noted elsewhere, during the abatement work conducted in critical barrier containments. The unit shall be located immediately outside the contained area and shall contain a wash down area. A pre-fabricated unit is acceptable.
- F. Contractor shall construct an equipment decontamination enclosure system consisting of a washroom, holding area and clean room separated by airlocks.
- G. Approved fire extinguishers (Class ABC, multi-purpose, dry chemical type, rated: 4A; 60BC) shall be readily available to workers (maximum travel distance of 50 feet) inside and adjacent to work area(s). Personnel and emergency exits shall be clearly indicated on the inside of the containment area. The emergency exit plan shall be approved by the District's Environmental Consultant prior to the set up of any work areas.

3.3 PERSONNEL PROTECTION

- A. Informed Workers:
 - 1. All workers shall be informed of the hazards of ACMs and any other hazardous materials exposure. Workers shall also be instructed in the use and fitting of respirators, protective clothing, decontamination procedures, and all other aspects associated with the abatement work.

B. Personal Hygiene Practices:

1. The Contractor shall enforce and follow good personal hygiene practices during the abatement of ACMs. These practices will include but not be limited to the following: no eating, drinking, smoking or applying cosmetics in the work area. The Contractor shall provide a clean space, separated from the work area, for these activities.
2. Workers shall remove street clothes in the clean room and put on a respirator and clean protective clothing before entering the work area. Upon exiting the work area, remove gross contamination from clothing before leaving the work area; proceed to the change room and remove clothing except respirators; proceed to the shower; clean the outside of the respirator with soap and water while showering; remove respirator and thoroughly wash. Following showering, proceed directly to the clean room and dress in street clothes. Do not wear disposable clothing outside the decontamination enclosure system.
3. If data gathered by the District or District's Environmental Consultant in areas adjacent to the work areas shows exposure to airborne asbestos or other hazardous materials exceeding Cal-OSHA criteria, that area will become regulated and workers must wear protective clothing and approved respirators and must have a shower facility provided to them.

C. Respirators:

1. Establish a respiratory protection program as outlined by ANSI and required by Cal-OSHA. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH). Respirators selected must be approved by the Competent Person. Submit program for review a minimum of five (5) working days prior to the commencement of abatement activities.
2. Provide workers with approved and personally-issued respirators with replaceable filters. Provide sufficient quantity of filters approved by NIOSH for use in asbestos environments so that workers can change filters as required by the manufacturer.
3. At a minimum, provide each employee with the following respiratory protection for each work phase:
 - a. Pre-cleaning, containment set-up, and containment removal work: NIOSH-approved, half-face respirators with HEPA cartridges.
 - b. Asbestos abatement of cooling tower seam sealant, mechanical flanges gaskets, pipe insulation sealants, and Class III work: half-face respirators with HEPA cartridges and organic vapor cartridges (as necessary).
4. At all times, respiratory protection selected shall, at a minimum, meet the requirements of the Table 1 below.

Table 1 – Respiratory Protection

<u>Airborne Concentration of Asbestos</u>	<u>Required Respirator</u>
Not in excess of 1.0 f/cc (10 X PEL)	Half-mask air purifying respirator other than a disposable respirator, equipped with high efficiency filters

Not in excess of 5.0 f/cc (50 X PEL)	Full facepiece air purifying respirator equipped with high efficiency filters
Not in excess of 10 f/cc (1,000 X PEL)	Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode
Not in excess of 100 f/cc (10,000 X PEL)	Full facepiece supplied air respirator operated in pressure demand mode
Greater than 100 f/cc or unknown concentration	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus

5. Provide Type C continuous flow or pressure-demand, supplied-air respirators if the average airborne concentration of asbestos exceeds 100 times the permissible exposure limit; i.e., 8-hour time-weighted average (TWA) and ceiling limit. Use the respirators presented in Title 8 CCR 1529 that afford adequate protection at such upper concentrations of airborne asbestos. When Type C Respirators are required provide the following:
 - a. The air supply system shall provide Grade D breathing air that conforms to OSHA and ANSI Commodity Specification for Air.
 - b. Compressed Air System for Type C Respirators shall be high pressure, with a compressor capable of satisfying the respirator manufacturer's recommendations. The compressed air system shall have compressor failure alarm, high temperature alarm, and a carbon monoxide alarm. It also shall have suitable in-line air purifying absorbent beds and filters to assure Grade D breathing air.
 - c. Use of Belt: Type C respirators shall be worn with belt to minimize possibility of dislodging face mask when hose is snagged in the work area.

D. Protective Clothing:

1. Provide personnel exposed to asbestos fibers with fire retardant disposable protective whole body clothing, head coverings, gloves, and foot coverings. Provide appropriate gloves to protect workers hands from exposure to hazardous materials. Make sleeves secure at the wrists and make foot coverings secure at the ankles with tape. Ensure that all personnel entering and leaving the work area follow this procedure. Suits shall be of adequate size to accommodate the largest employee. Foot covers may be part of the coveralls. Non-disposable footwear shall be left in the work area until it is decontaminated or disposed of at the completion of the job.
2. Protective clothing 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.

E. Eye Protection: Provide safety glasses or goggles to personnel removing or handling asbestos-containing materials and waste.

- F. Emergency Precautions and Procedures:
1. Establish emergency and fire exits from the work area. Display necessary signage at exits and paths to exits with representative visual aids. A diagram of all emergency and fire exits shall be posted in a conspicuous area proximate to the entrance to each work area.
 2. The Contractor's supervisor/competent person shall be trained and certified in first aid and CPR, and be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, the Contractor shall implement fiber reduction techniques until the injured person has been removed from the work area.
 3. In the event of a loss of negative pressure to the work area, work shall stop immediately and entrances to the work area sealed tight. The Contractor shall also institute fiber reduction controls until negative pressure is re-established to acceptable levels.

3.4 ASBESTOS REMOVAL (GROSS REMOVAL TECHNIQUE)

- A. The Contractor shall abate all ACMs identified in this specification and/or that require disturbance to complete work specified in other specification sections.
- B. The Contractor shall continuously apply wetting agent throughout the removal process. The wetting agent shall be applied with a low-pressure fine spray to minimize fiber releases. The materials shall be thoroughly saturated so that there is no detectable fiber release. All ACM shall be immediately packaged in leak-tight containers following removal.
- C. Minimize removal activities of ACMs that generate airborne particulate. To the extent feasible, score or cut-out ACMs in sections, wetting along the scoring line continually, and misting the air with an airless sprayer to knock down suspended particulate. After completion of removal work, surfaces from which asbestos has been removed shall be wet cleaned to remove all visible material and residue.
- D. Coordinate extent of removal with the other contract documents.
- E. Wet clean the exterior surfaces of waste containers in the equipment decontamination enclosure system prior to removal from the work area. Ensure that workers do not enter from uncontaminated areas into contaminated areas in the equipment decontamination enclosure system. The Contractor shall transport asbestos-containing waste bags to the waste debris box at designated hours approved by the District or District's Environmental Consultant. RACM shall be packaged in a minimum of two (2) 6-mil polyethylene bags. Bags shall be properly labeled for RACM disposal including site-specific generator labels. Non-friable waste shall be packaged in clear, leaktight containers and properly labeled while stored on-site.
- F. Asbestos-containing debris and contaminated water shall be cleaned from the work area at the end of each work shift. The Contractor shall clean the work area using wet methods and HEPA vacuum equipment.

3.5 REGULATED AREA MONITORING

- A. Prior to each work shift and continuously throughout the project, each containment and decontamination enclosure system shall be inspected and repaired as needed.
- B. Ambient asbestos fiber levels outside each work area shall not exceed 0.01 f/cc (PCM) or 70 s/mm² (TEM) or background whichever is greater. If the asbestos fiber concentrations outside work areas exceed those levels shown above, then abatement must stop and operations be reviewed and modified until the fiber count can be reduced to within the acceptable limits.

3.6 AIR MONITORING

- A. The purpose of any air monitoring that may be conducted by the District or District's Environmental Consultant will be to detect possible release of fibers or dusts (asbestos or lead) emanating from the work areas.
- B. All PCM air sample analysis shall comply with NIOSH Method 7400. All TEM analysis shall be consistent with modified-AHERA protocols or NIOSH 7402.
- C. The District or District's Environmental Consultant reserves the right to perform and / or observe final clearance inspection and sampling.
- D. The method of analysis for pre-abatement and clearance air samples shall be via Phase Contrast Microscopy (PCM). The method of analysis for in-progress asbestos air samples shall be PCM and TEM at the option of the District or District's Environmental Consultant.
- E. The Contractor shall be responsible for all personal air sampling. These samples shall be taken each shift and for each distinct crew operation, and shall be used to verify adequacy of fiber control and respiratory protection. Personal breathing zone air sampling shall be in accordance with the Cal-OSHA asbestos standard. A minimum of 25% of the workforce shall be monitored during each shift. All sample results shall be available on-site within 24-hours of sample collection. If two consecutive shifts of non-compliant or overloaded samples are noted, the contractor shall hire a CAC/CSST at their own expense to assist in compliance with the specifications.

3.7 CLEARANCE INSPECTIONS

- A. The District or District's Environmental Consultant reserves the right to conduct visual inspections. Contractor shall notify the District or District's Environmental Consultant when the decontamination process in each containment area is complete. Evidence of debris will require additional clean up by the Contractor. Contractor shall be responsible for re-cleaning all areas found to be deficient.
- B. If the District or District's Environmental Consultant determines that the work area is sufficiently clean, the Contractor may proceed. If the District or District's Environmental Consultant determines that certain areas require additional cleaning, the Contractor shall re-clean the work area and request a second inspection of the recleaned area. All costs incurred by the District or District's Environmental

Consultant for inspections required after the second inspection will be charged to the Contractor.

- C. Once the initial visual is passed, the Contractor shall remove all but the containment critical barriers.
- D. Following the visual inspection, the Contractor shall provide a coating of non-diluted encapsulant in the work area. The Contractor shall allow the encapsulant to dry for the period specified by the manufacturer.
- E. Asbestos Clearance Testing: Following encapsulation and drying time, the Contractor shall conduct air clearance sampling. Clearance air sampling shall not take place until all encapsulant is dry. The District or District's Environmental Consultant reserves the right to approve the initiation of clearance sampling.

3.8 ASBESTOS CLEARANCE CRITERIA:

- A. The clearance level per containment shall be less than 0.01 fibers per cubic centimeter via phase contrast microscopy (PCM) or less than 70 structures per square millimeter via transmission electron microscopy (TEM). Aggressive air sampling shall be used for clearance purposes. Multiple samples shall be collected in large containment areas.
- B. If air samples do not pass the required clearance criteria, the area shall be recleaned and new samples shall be collected by the District or District's Environmental Consultant. The Contractor shall be responsible for all costs associated with re-sampling and re-analyses. This amount will be deducted by the District from the Contractor's final payment.
- C. The District or District's Environmental Consultant shall notify the Contractor in writing of acceptable asbestos fiber concentrations. The Contractor shall then remove all the remaining barriers in the work area.

3.9 ASBESTOS DISPOSAL

- A. It is the responsibility of the Contractor to determine current waste handling, labeling, transportation, and disposal regulations for the work site and for each waste disposal landfill. The Contractor must comply fully with these Specifications, local, state, and federal regulations and provide documentation of the same.
- B. Ensure that polyethylene bags are sealed air-tight. All bags shall be wet cleaned prior to removing them from the equipment decontamination enclosure system.
- C. Ensure all disposal containers are properly labeled according to 8 CCR 1529, 5194 (HAZCOM), 49 CFR 171-179 (USDOT), 40 CFR 61 Subpart M (NESHAP), and any local regulations and state regulations as required by this specification.
- D. Filter all wastewater to the technically feasible limit, but not more than five (5) microns before disposal. Comply with all current local, state and federal codes relating to waste water release.

- E. Asbestos-containing waste that is properly labeled and double-bagged may be temporarily stored in areas approved by the District. Areas must be made secure before storing the waste. Waste is not to remain in temporary storage area for longer than four (4) days before final load-out of materials.
- F. All friable asbestos waste shall be double-wrapped prior to transport from the site.
- G. All vehicles used to transport hazardous waste must be registered with the Department of Toxic Substances Control and Department of Transportation and maintain proper registration and with vehicle at all times.
- H. Trucks must have an enclosed cargo area with a storage compartment that is fully lined with a minimum of one (1) layer of 6-mil polyethylene on the walls and two (2) layers on the floor.
- I. All vehicles and containers used to transport waste are subject to inspection and approval of District prior to departure from site.
- J. Contractor shall not throw bags into the truck in a way that may cause the bags to burst open.
- K. Contractor shall provide at minimum one (1) day advance notification to the District when signatures are required on manifest(s). The Contractor shall ensure that the Hazardous Waste Manifest is correctly filled out. The Contractor shall give the appropriate copies to the District and shall also instruct the District in writing that they must send the appropriate copy to the Department of Toxic Substances Control.
- L. If a debris box is used, the Contractor shall make all necessary arrangement with the District including obtaining all appropriate permits.
- M. Contractor is responsible for all coordination with the waste disposal site and with the waste hauling company.
- N. Debris box for hazardous waste shall be fully lined with a double layer of polyethylene sheeting and must be locked at all times when unattended.
- O. Debris box shall be constructed with minimum 20-gauge steel with no windows or openings other than the door. The door of the container shall have a secure cover on the locking device with access to the lock only at the key-hole. Once the debris box is filled and the manifest is signed, Contractor must transport the debris box off the job site.
- P. Disposal shall be in a District approved landfill that meets EPA requirements.

**TABLE I
ESTIMATED QUANTITIES
ASBESTOS-CONTAINING MATERIALS**

Material Description	Material Location	Waste Category	Asbestos Type	Estimated Quantity
Sealant, White	Cooling Tower – Flange sealant	Cat. II	2% CH	20 sf
Flange Gaskets	Cooling Tower, Chiller, and Mechanical Room	Cat. I	30 - 70% CH	15 gaskets
Off-White Mastic/Sealant	Chiller and Mechanical Rooms – Applied on Fiberglass Pipe Insulation – Ends and at Valve Bodies	Cat. II	2% CH	25 sf

NA = Not Applicable, CH = Chrysotile, RACM = Regulated asbestos containing material (friable), Cat. I = Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), Cat. II = Category II Non-friable (note ACM must be reclassified as a RACM if rendered friable during removal), sf = square feet

END OF SECTION 02 82 00

ATTACHMENT A
ASBESTOS ABATEMENT WORK PLAN OUTLINE

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific Asbestos Abatement Work Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District's facilities and the environment.

I. Location of Work:

The work to be completed under this work plan will be completed at:

(Building name)

(Location within building)

Previous asbestos inspections or surveys have found that ACMs are present at the following locations:

(List all materials and locations to assure the District and the Contractor are aware of all hazardous materials locations)

II. Description of Work:

Describe the anticipated work scope

III. Schedule:

Phase/Task	Anticipated Date(s)
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Mobilization	_____
Set-up of work area(s), containments	_____
Abatement	_____
Final Cleaning	_____
Visual Inspection	_____
Final Clearance (visual and air sampling)	_____
Teardown	_____
Demobilization	_____

IV. Equipment and Materials

List all equipment and materials to be used, such as the following:

HEPA Vacuums	Negative air filtration units
Scrapers	Manometers
Power saws	Shower facilities
Pry bars	Airless sprayers/compressors
Cutting shears	Cleaning detergents
Other hand tools	Solvents (must be approved by District)
Encapsulants/sealants	Roller/brushes
Gloves	Disposable coveralls
Respiratory protection	Eye & foot protection
Fall Protection	Scaffolds/Ladders
Gas/Diesel Powered Equipment	

V. Crew

List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure/ contamination controls, and engineering controls. This description should include, but not be limited to, the following:

OSHA Class I, II, III and IV work	Wet methods
Negative pressure enclosure	Glovebag removal
Respiratory protection	HEPA vacuums
Mini-containments	Solvent removal of mastic
List other procedures	

VII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

VIII. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking, and before leaving the project site. Describe handling or treatment of asbestos-contaminated solid waste and wastewater.

IX. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring and proposed consultant if air sampling requirements are not met from two consecutive shifts.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas, locations of negative air machines and exhaust locations, direction of airflow, and decontamination areas.

XI. Waste

Describe how all waste on this project will be packaged, labeled, stored, transported, manifested and disposed

XII. Preparation of Asbestos Abatement Work Plan

Date Prepared and Prepared By (signature, name and title)

SECTION 02 83 00

LEAD-CONTAINING PAINT REMOVAL AND LEAD-RELATED CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions and Division I General Requirements shall be included in and made part of this Section.
- B. Examine all other Sections of the Specifications for requirements therein affecting the work of this Section of the Specifications.

1.2 COMPLIANCE AND INTENT

- A. The Contractor is responsible for repair, to the satisfaction of the District, of surfaces not scheduled for demolition that become damaged as a result of the work. All unscheduled repair work shall be at no increase to contract price.
- B. Contractor shall coordinate lead related work with all site requirements related to protection of existing finishes.
- C. This project deals with lead-related construction work. It is necessary for the Contractor to coordinate all work with the project drawings and specifications. During all work, provide monitoring and worker protective equipment in accordance with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this specification. Where there is conflict, the most stringent requirement shall apply.
- D. The work covered by this specification includes the handling, removal, and proper disposal of lead. All hazardous materials shall be removed and disposed of according to all federal, state and local regulations.
- E. Workers conducting lead-related construction work shall have received lead training in accordance with Cal-OSHA requirements and Department of Public Health (DPH) as appropriate.
- F. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for lead-related construction work in accordance with this specification.
- G. Comply with all federal, state, and local regulations pertaining to lead-related construction work, storage, transportation and disposal; employee health and safety; Contractor certifications; and all licenses, permits, and training.
- H. Work on the premises shall be confined to areas designated in the Contract Documents. Materials and equipment shall be stored within areas designated by the District. Should additional space be required, the Contractor shall request

permission for additional space and shall adequately safeguard occupants from associated health and safety hazards.

- I. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to handling, and the subsequent cleaning of contaminated areas.
- J. During lead-related construction activities, the Contractor shall protect against contamination of soil, water, plant life, adjacent building areas, and shall ensure that there is no airborne release of dusts. The District may collect air samples in the building and in adjacent areas to evaluate the Contractor's performance. Evidence of settled dust or airborne levels of contaminants above background will require the implementation of additional controls at no increase to contract price.
- K. It is the Contractor's responsibility to determine the impacts required to lead containing products. The Contractor shall conduct a site visit to determine locations of materials that will require removal or will be disturbed during the mechanical replacement work. This section provides appropriate protocols for handling and disposal of lead. All lead-related construction work shall be performed according to the procedures outlined in this specification.
- L. Lead containing materials removed during the work activities shall be disposed of in an approved manner complying with all applicable federal, state, and local regulations. Appropriate waste manifests or letters of salvage shall be furnished to the District thereby limiting the District's liability for improperly salvaged items. Materials are conveyed to the Contractor "as is," without any warranty, expressed or implied, including but not limited to, any warranty to marketability or fitness for a particular purpose, or any purpose.

1.3 SUMMARY OF LEAD-RELATED WORK

- A. General. This contract involves removal of painted components that contain detectable quantities of lead to facilitate the mechanical equipment replacements as outlined by Project C-1067. Existing building components with paint coatings are considered lead-containing paint (LCP) unless tested and proven otherwise. See RGA Environmental's "Limited Hazardous Materials Survey Report" for a summary of painted surfaces tested. The intent of this work and the required procedures is to minimize lead emissions, contamination, and prevent exposure to building occupants, visitors and employees resulting from demolition of finishes, hot work, other painted finish disturbances
- B. Lead-Related Construction Work: The Contractor's lead-related construction work consists of any work activity or task which results in the coincidental removal or disturbance of paints, surface finishes, or other lead containing. The Contractor shall determine and implement applicable OSHA worker protection requirements (8 CCR1532.1) and ensure proper clean-up and disposal of any resulting paint chips and lead wastes resulting (including water) from all lead-related construction activities including, but not limited to, the following:

1. Removal of damaged and intact paint from concrete, plaster, drywall, wood, metal and structural and non-structural steel surfaces prior to required contract work.
2. Removal of intact paint from structural or non-structural steel prior to hot work.
3. Hot work that is likely to be vaporized from accessible and inaccessible painted surfaces.
4. Demolition of building or mechanical equipment surfaces with lead containing paint.
5. Work that will impact existing painted surfaces including but not limited to drilling, cutting, removal of existing attachments (fixtures, casework, millwork, electrical, plumbing, telecom, life safety, etc.).

1.4 REGULATIONS

- A. The Contractor shall comply with the requirements of the current issue of the following regulations and guidelines governing lead removal, lead-related construction and disposal and other applicable Federal, State, and Local Government regulations. The regulations listed herein are incorporated by reference.
 1. Code of Federal Regulations (CFR):
 - a. 29 CFR 1926, Construction Standards
 - b. 29 CFR 1926.62, Lead in Construction
 - c. 29 CFR 1910.94, Ventilation
 - d. 29 CFR 1910.134, Respiratory Protection
 - e. 29 CFR 1910.1025, Lead
 - f. 29 CFR 1910.1200, Hazard Communication
 - g. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists
 - h. 29 CFR 1926.57, Ventilation
 - i. 40 CFR Part 50.12, Ambient Air Quality Standard for Lead
 - j. 40 CFR Parts 260, 261, 262, 263, 264, 265 and 268, Hazardous Waste Management
 - k. 49 CFR Parts 172, 173, 178, 179, Hazardous Material Transportation
 2. California Code of Regulations:
 - a. 8 CCR Division 1, Chapter 4, Subchapter 4, Construction Safety Orders
 - b. 8 CCR 1532.1, Lead in Construction
 - c. 8 CCR 1537, Welding, Cutting, and Heating of Coated Metals
 - d. 8 CCR 5144, Respiratory Protection
 - e. 17 CCR, Division 1, Chapter 8
 - f. 26 CCR Division 22, Hazardous Waste

3. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, U.S. Department of Housing and Urban Development (HUD), June, 1995.

1.5 DEFINITIONS

A. Definitions specific to the work of this section:

1. **Abatement:** Procedures for control of lead exposures to the Contractor's workers, Employees, Public and the environment by removal, enclosure, and/or encapsulation of lead-containing paints (LCPs), Lead-Containing Construction Materials (LCCMs), and LCP coated components and proper clean up and disposal of resulting lead contaminated dust, chips, debris, and abatement wastes. Also include procedures for control of lead exposures resulting from welding or other hot work on surfaces with LCPs or residues.
2. **Action Level (AL):** An exposure of 30 mg/m³ of airborne lead as an 8-hour TWA. When the AL is met or exceeded, certain protective health and safety measures are triggered per 8 CCR1532.1 Lead.
3. **Action Levels for Lead Content:** The levels of lead concentration established for each type of analysis performed, which if the lead concentration equals or exceeds the action levels specified herein, renders the material hazardous.
 - a. **Action Level for Toxicity Characteristic Leaching Procedure (TCLP)** by EPA 200.7: Action level for TCLP is 5.0 milligrams per liter.
 - b. **Action Level for Total Threshold Limit Concentration (TTLC)** by EPA 6010: Action level for TTLC is 350 milligrams per kilogram.
 - c. **Action Level for Soluble Threshold Limit Concentration (STLC)** by EPA 200.7: Action level for STLC is 5.0 milligrams per liter.
4. **Airlock:** A system for permitting ingress or egress with minimum air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least three feet apart.
5. **Air Monitoring:** The process of measuring the lead content of a specified volume of air in a stated period of time.
6. **Area Monitoring:** Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations that may reach the breathing zone of personnel potentially exposed to lead.
7. **Authorized Visitor:** District representatives, District's Environmental Consultant, or a representative of any regulatory or other agency having jurisdiction over the project.
8. **Change Room and Shower Facilities:** Rooms within the designated boundary around the lead control area equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevent cross-contamination.
9. **Clean Room:** An uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.

10. Competent Person: An onsite supervisor who has been formally trained in lead abatement and who is capable of identifying lead hazards, substandard and improper lead abatement controls, procedures, practices, and conditions and who has sufficient experience and authority to take prompt corrective measures to eliminate them.
11. Decontamination Room: Room for removal of contaminated personal protective equipment (PPE).
12. District: Contra Costa Community College District.
13. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's lead-related construction activities and work.
14. DOP Test: Test of a High Efficiency Particulate Absolute filter (HEPA) system to verify that a minimum of 99.97% of all particles 0.3 microns in diameter are captured by the filter system test must be conducted with dioctylphthalate (DOP) test aerosol in accordance with ANSI Z9.2-1979 and Federal Standard 209-B for Class 100 air and as indicated in UL 586.
15. Eight-Hour Time Weighted Average (TWA): Airborne concentrations of lead averaged over an 8-hour workday to which an employee is exposed.
16. Fixed Object: A unit of equipment or furniture in the Work Area which cannot be removed from the Work Area.
17. Hazardous Waste: Lead paint debris and materials shall be classified as hazardous due to the characteristic of toxicity, as determined by testing in accordance with the California Code of Regulations, Title 22, Division 4, Chapter 30, Article 11. Any substance(s) listed in Article 11 Section 66699 at concentrations greater than their listed Soluble Threshold Limit Concentration (STLC) or Total Threshold Limit Concentration (TTLC) may need to be further characterized by the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with 40 CFR 261 and other tests prior to disposal as a hazardous waste.
18. HEPA Exhaust System: A portable local exhaust system equipped with HEPA filtration and capable of maintaining a constant, low velocity air flow into contained contaminated areas from adjacent uncontaminated areas when used as Differential Pressure Equipment. Also capable of use as local exhaust to control lead fumes generated from hot work.
19. HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of lead particles greater than 0.3 microns in diameter.
20. HEPA Vacuum Equipment: High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining lead dust. Filters shall be certified to be of 99.97% efficiency for retaining particles of 0.3 microns diameter or larger.
21. Intact LCP Components: LCP components removed substantially intact with LCP firmly adhering to the surface. Examples are door, door trim, baseboards, etc., with intact paint. Also referred to as architectural debris with intact paint.

22. Lead-Based Paint (LBP): Lead-Containing Paint (LCP) that is at least 0.5% lead by weight when analyzed by AAS or ICP-AES (equivalent to 5000 ppm of lead) or 1.0 milligrams of lead per square centimeter (mg/cm²) as determined by XRF testing or as identified by specification. LBP is also a Lead-Containing Construction Material (LCCM).
23. Lead-Containing Construction Materials (LCCM): Any construction material: (1) containing lead at analytically detectable levels greater or equal to 50 ppm; or (2) containing paints or other finishes with lead at levels greater than 600 ppm; or (3) consisting of paints containing lead at any level capable of posing an occupational or environmental hazard during any phase or process of the current construction or demolition project. Occupational hazards shall be considered evident when airborne exposure levels exceed or are likely to exceed the permissible exposure level (PEL) set by Cal/OSHA. Environmental hazards shall be considered evident when lead surface contamination levels exceed 40 ug/ft² on interior floor surfaces and 400 ug/ft² on exterior surfaces and/or when any of the State or Federal hazardous waste criteria for lead is met or exceeded.
24. Lead-Containing Paint (LCP): Any paint or finish coating with a lead content of 0.06% lead or greater. Cal/OSHA regulation requires assessment of employee exposure for all tasks where lead is present at this level or higher. Note: At lead levels below 0.06% exposure assessments are still required for "Trigger Tasks".
25. Lead Control Area: An enclosed area or structure with full containment to prevent the spread of lead dust, paint chips, or debris of LCP removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.
26. Lead-Related Waste: Paint chips, vacuum dust, and debris, used cleaning articles, waste water, plastic sheets and other disposable items which were used during the LCP abatement process and as a result are considered lead contaminated waste or assumed hazardous waste pending further characterization.
27. Lead-Impacted Construction: Any construction activity, excluding abatement, which disturbs lead or lead-containing paints or coatings and which may, under specific circumstances, result in worker and or environmental exposure.
28. Lead-Related Construction: Any construction activity or process including but not limited to lead abatement, LCCM (i.e. paint) removal lead-impacted construction, or welding on lead-containing surfaces which may expose workers, building occupants, or the environment to a release of airborne lead or surface lead contamination.
29. Mini-containment or Mini-enclosure: A small temporary enclosure constructed of impervious material (such as plastic sheeting) with at least one airlock to permit ingress and egress. The entire Work Area is contained or enclosed by this system to prevent the escape of contamination outside the Work Area.
30. Permissible Exposure Limit (PEL): An exposure to airborne lead of 50 micrograms of lead per cubic meter of air (50 mg/m³), averaged over an 8-hour workday which is referred to as a time weighted average (TWA). This is the

highest level of Lead in air an employee can be permitted to be exposed to in an eight hour work day. For longer work days, the PEL is lowered and can be determined by dividing 400 by the number of hours worked per day. When the PEL is exceeded, the contractor must take action to lower the exposure level and protect the worker per 8 CCR1532.1 Lead.

31. Personal Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour TWA concentration in accordance with Title 8 CCR 1532.1. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulder, with a radius of 6 to 9 inches and the center at the nose or mouth of an employee.
32. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area".
33. Qualified Person: The individual identified by the Contractor to be responsible for conducting air sampling, calibration of air sampling pumps, evaluating sampling results, and conducting respirator fit tests.
34. Recognized Training/Educational Institution: University, college, Steel Structures Painting Council, or a professional training organization funded by or meeting U.S. Environmental Protection Agency (EPA) and/or California Department of Health Services (DHS) training accreditation requirements for contractors performing lead-based paint or construction abatement work.
35. Removal: All herein specified procedures necessary to remove and clean-up all LCCM or LCP from the designated areas and to dispose of these materials at an acceptable site in accordance with Federal, State and Local Regulations. Removal of LCP may be by whole painted component or by removing LCP from painted components either onsite or offsite.
36. Trigger Task: Task specifically identified by the CAL/OSHA Lead standard as a potential exposure hazard requiring certain protective measures to be implemented prior to obtaining the results of an initial exposure assessment. Trigger tasks include, but are not limited to, any of the following tasks when materials or paints which contain lead are present and will be disturbed:
 - a. Manual demolition
 - b. Manual scraping or sanding
 - c. Heat gun application
 - d. Use of power cleaning tools
 - e. Rivet busting
 - f. Abrasive blasting
 - g. Welding, cutting or torch burning
37. Visually Clean: Free of visible dust, paint chips, dirt, debris, or films removable by vacuuming or wet cleaning methods specified. For outside soil or ground cover areas, visually clean shall mean free of construction or paint debris, chips or dust distinguishable from the initial soil or ground conditions.

38. Washroom: A room or area established outside the Work Area for hand washing at minimum. Where the lead PEL is exceeded, the wash room shall contain a shower facility with hot and cold water and a water filtering system.
39. Wet Cleaning: The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been washed with specified detergent solutions and rinsed with clean water.
40. Work Area: A designated and controlled area in which lead abatement actions are undertaken or which may become contaminated as a result of such actions. A Work Area is a controlled area delineated at minimum by barrier tape (or similar means) and signage to restrict access to Authorized Personnel. In some instances, a higher degree of physical isolation and control may be required and specified.

1.6 SUBMITTALS AND NOTICES

- A. Requirements are as set forth in the General Conditions and Division 1, for items required to be submitted under this section.
- B. Product data shall include manufacturer's product data, specifications, samples and application instructions and other pertinent information necessary.
- C. Project procedure submittal for LCP coating removal. Submit the following:
 1. Detailed work plan for all lead-related construction including: (a) removal method to be employed; (b) lead contamination controls for each different type of method or work operation involving lead-containing paint removal; (c) equipment and materials proposed to be used on LCP coatings; (d) the procedures and practices for protection of building occupants and the environment; and (e) detailed description of Work Area preparation and containment controls for lead-related construction work, cleaning and decontamination procedures, signage, and security measures. Detailed work plan shall follow the outline in Attachment A – Lead- Related Work Plan Outline.
 2. Detailed plan for disposal of lead-contaminated wastes generated by this work in accordance with all applicable Federal, State and Local regulations. Each separate waste stream should be addressed including name of waste stream, methods of handling, packaging, labeling, storage, transportation, and disposal or recycling. For materials to be disposed, indicate the classification of the waste (RCRA hazardous, California hazardous, or non-hazardous).
 3. Method of transport of hazardous waste including name, address, EPA I.D. number, and telephone number of the transporter and the name, class, address, EPA I.D. number, and telephone number of hazardous waste site(s) to be utilized for disposal of each waste stream.
 4. Proposed location, size and type of secured waste storage containers to be used. Include system that will be used for segregating different waste streams.

5. Detailed schedule for completion of lead-related construction work to be updated on a weekly basis indicating tasks being performed until job completion.
 6. Detailed plan for protection of workers conducting lead-related construction work which includes all information required for the CAL/OSHA lead compliance plan per Title 8 CCR 1532.1. At minimum, for each removal method, the plan shall detail protective clothing and equipment and procedures and worker decontamination facilities and procedures.
- D. Project Procedures Submittal for Hot Work on LCP Surfaces
1. Detailed work plan for containment and removal of lead-containing paint, capture of fumes from all hot work including welding and torch cutting on structural steel. Include equipment and materials proposed to remove paint, capture, HEPA filter, and exhaust all lead-containing fumes for protection of workers, building occupants, and the environment.
 2. Cal/OSHA lead compliance plan for welders per 8 CCR 1532.1 Lead.
 3. Containment requirements as specified in Title 17 CCR Division 1, Chapter 8.
- E. Project procedure submittal for lead-related construction demolition (demolition of finishes with lead containing paint or lead containing materials). Submit the following:
1. Detailed work plan for all lead-related construction including: (a) removal method to be employed; (b) lead contamination controls for each different type of method or work operation involving lead-containing materials; (c) equipment and materials proposed to be used on lead containing materials; (d) the procedures and practices for protection of building occupants and the environment; and (e) detailed description of Work Area preparation and containment controls for lead-related construction work, cleaning and decontamination procedures, signage, and security measures.
 2. Detailed plan for disposal of lead-contaminated wastes generated by this work in accordance with all applicable Federal, State and Local regulations. Each separate waste stream should be addressed including name of waste stream, methods of handling, packaging, labeling, storage, transportation, and disposal or recycling. For materials to be disposed, indicate the classification of the waste (RCRA hazardous, California hazardous, or non-hazardous).
 3. Method of transport of hazardous waste including name, address, EPA I.D. number, and telephone number of the transporter and the name, class, address, EPA I.D. number, and telephone number of hazardous waste site(s) to be utilized for disposal of each waste stream.
 4. Proposed location, size and type of secured waste storage containers to be used. Include system that will be used for segregating different waste streams.
 5. Detailed schedule for completion of lead-related construction work to be updated on a weekly basis indicating tasks being performed until job completion.

6. Detailed plan for protection of workers conducting lead-related construction work which includes all information required for the CAL/OSHA lead compliance plan per Title 8 CCR 1532.1. At minimum, for each removal method, the plan shall detail protective clothing and equipment and procedures and worker decontamination facilities and procedures.
- F. Lead Abatement Personnel Qualification and Protection Submittal. Submit the following:
1. Employee training certifications demonstrating that all employees engaged in LCP removal or hot work activities have attended formal lead hazard and lead-related construction training by a Recognized Training/Educational Institution. All training for other lead-related construction activities shall be in accordance with the worker training provisions in the CAL/OSHA and California Department of Public Health (DPH) lead regulations and this specification:
 - a. The minimum acceptable training course duration is 40 hours for the Contractor's lead abatement Supervisor/Competent Person and all workers conducting removal of LCP.
 - b. The minimum training course for workers conducting other lead-related construction work shall meet all requirements of 8 CCR1532.1, Lead. Documentation shall consist of training institution certificates or certification by trainer for each employee with dates trained and a copy of the training syllabus.
 - c. Updated information shall be provided in advance of on-site lead worker personnel changes.
 2. Documentation that all employees engaged in lead-related construction activities or the "Trigger Tasks" have had the appropriate medical examinations specified in Title 8 CCR1532.1 within the prescribed time periods immediately preceding project start-up. It shall be the Contractor's responsibility to secure any and all medical and exposure information releases required for employee records in accordance with regulation. Evidence of medical requirement compliance shall include, but are not necessarily limited to:
 - a. Documentation of medical surveillance examination by a licensed medical physician prior to commencement of onsite LCP-related work including baseline blood lead levels performed within the last six (6) months. The baseline blood lead shall have been within the past 30 days.
 - b. Statement by the examining physician that employee is fit to wear a respirator in accordance with 8 CCR 1532.1 within the last twelve (12) months.
 3. Documentation that all employees required to wear respirators has passed respirator fit tests within the past twelve (12) and has been assigned individual respirators which fit them.

4. Methods, procedures and plan for monitoring employee airborne lead exposure during lead abatement activities. Methods and procedures, at a minimum, shall comply with requirements outlined in Title 8 CCR 1532.1 Lead.
- G. Lead Abatement Product and Equipment Submittal. Submit the following;
1. Calibration data showing where secondary standards (rotometer) for personal air monitoring equipment have been calibrated from a primary standard within the last 30 days from the date of submittal.
 2. Product data sheets and material safety data sheets (MSDS) for each product proposed for use on this project such as wetting agents, chemical paint removers, detergents, adhesives, and abrasives.
 3. Manufacturers certification that HEPA vacuums, HEPA ventilation equipment, and other equipment required to contain airborne dust and fume conform to ANSI Z 9.2
 4. Product data sheets for all power tools and equipment used to remove LCP including, but not limited to, heat guns, and vacuum-assisted power tools.
 5. Certification that HEPA filter exhaust systems have been DOP tested in-place after installation and been found to provide 99.97% efficient air cleaning for particulates greater or equal to 0.3 microns in diameter. All DOP filter certification testing shall be conducted on site by an independent testing firm.
- H. Lead Abatement Daily Submittal - submit the following documentation daily to the District or the District's Environmental Consultant within 24 hours of initiation:
1. An accurate daily entry log or roster of all authorized personnel entering and exiting the Work Area.
 2. Copies of initial and periodic personnel air monitoring laboratory results and calculated eight hour time weighted average results for each employee monitored shall be provided within 48 hours of sample collection.
 3. Provide the District and/or District's Environmental Consultant at least 24 hours notice prior to scheduling start-up of each different by type of lead-related construction operation including chemical paint removal, power tool removal, and welding on lead-containing surfaces.
 4. Updated training and medical certifications (as required herein) shall be provided prior to assignment of new personnel and for existing personnel prior to the stated allowable time limits or expiration dates. The allowable intervals since the last medical examination (12 months), blood lead test (6 months), or fit test (12 months), shall not be exceeded.
- I. Lead Abatement Close-out Submittal - Submit the following:
1. Provide post-abatement blood-lead test documentation for each worker required to undergo blood lead monitoring prior to or during lead-related work, disposal manifests and records as required herein for project closeout. Each worker transferred or terminated shall have a final blood-lead test within five days of termination or transfer. Each worker shall have a final blood-lead test within five days of project completion.

1.7 DISTRICT'S ENVIRONMENTAL CONSULTANT

- A. The District's Environmental Consultant is authorized to provide lead removal and lead-related construction compliance observation and monitoring, testing, and technical oversight services including, but not limited to:
1. Airborne lead monitoring to evaluate the effectiveness of the Contractor's lead dust and fume control work practices, procedures, and dust containment methods. The results from this monitoring shall be used to evaluate the Contractor's personal monitoring data and to evaluate the Contractor's compliance with occupational and environmental regulations.
 2. Visual inspections to verify if the Contractor has met the requirements for various phases of the lead related construction process including Work Area preparation, removal, and clean up and decontamination.
 3. Wipe sampling for lead contamination to determine if the Contractor has successfully completed clean up and met the lead-related construction project decontamination completion standards.
- B. The cost of the District's Environmental Consultant will normally be the responsibility of the District except under the following circumstances. The Contractor shall be responsible for the cost of the District's Environmental Consultant for additional services provided when: (1) the Contractor's Work Area fails final clearance inspection and/or testing; or (2) additional workdays or workday hours (overtime) are required by the Contractor; or (3) the Contractor exceeds the allowable number of workdays for work completion; or (4) additional services associated with response to an uncontrolled, unauthorized hazardous materials release to the environment by the Contractor's work or operations.

1.8 CONTRACTOR'S COMPLIANCE AND QUALITY ASSURANCE

- A. The Contractor shall have a Competent Person onsite at all times while lead-related construction work is in progress. The Contractor's Competent Person shall communicate and coordinate with the District's Environmental Consultant with regard to work schedule, inspections, daily submittals, and compliance issues.
- B. The Contractor's Competent Person shall:
1. Ensure the Contractor's compliance with the plans and specifications.
 2. Conduct worker exposure monitoring using a Qualified Person and provide results to the District's Environmental Consultant.
 3. Conduct daily air monitoring during hot work operations involving LCP or LCCM coating on steel structures to verify that the nearest building occupant locations are not exposed to airborne lead levels in excess of 5 $\mu\text{g}/\text{m}^3$ lead per 8-hour work shift or 1 $\mu\text{g}/\text{m}^3$ lead per 24 hour period.
 4. Pre-inspect Work Areas for compliance and completion prior to notifying the District's Environmental Consultant of the Work Area's readiness for inspection.
 5. Accompany the District's Environmental Consultant during Work Area pre-start and clearance inspections upon request.

6. Ensure all of the Contractor's lead-related construction workers have current valid medical, blood-lead test, training, and respirator fit testing records where required and provide copies of all new or updated records to the District's Environmental Consultant for approval before assigning the workers to any work within Work Areas.
7. Take timely and appropriate corrective actions to ensure compliance with the lead removal and lead-related construction specifications and to eliminate unsafe, unhealthy, and environmentally unsound work practices regardless of whether or not they are brought to the Contractor's attention by the District's Environmental Consultant.
8. Adhere by the Consultant's initial characterization of waste for proper packaging, labeling, storage, transportation, and disposal of waste. Ensure any additional waste testing required is completed and ensure proper storage, shipping and timely disposal of all hazardous waste.

PART 2 - PRODUCTS

2.1 PROTECTIVE COVERING

- A. Polyethylene sheets, fire resistant, of 6 mil thickness in size (dimensions) to minimize the frequency of joints.

2.2 CLEANERS

- A. For clean up and decontamination, a tri-sodium phosphate (TSP) wash solution containing at least five percent (5%) TSP shall be used. Alternative cleaning and decontamination agents shall be subject to approval by the District and the District's Environmental Consultant.

2.3 TAPE

- A. Duct tape (or approved equivalent) two (2) inches or wider, capable of sealing joints of adjacent sheets of polyethylene sheeting and for attachment of polyethylene sheeting to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.

2.4 CHEMICAL PAINT REMOVAL SYSTEMS

- A. Chemical paint removal systems shall be selected on the basis of the type of paint to be removed, the substrate type, and chemical compatibility with new coating systems to be applied. Chemical removal systems shall effectively remove paint without adversely affecting the treated surface's suitability for repainting or adversely affecting the bonding, appearance or durability of the coatings to be applied.
- B. Chemical paint removal systems containing methylene chloride are prohibited.
- C. Submit manufacturer's product data sheets for each chemical remover for review and approval by the District's Environmental Consultant.

2.5 SPRAY ADHESIVE

- A. Provide spray adhesive in aerosol cans which is specifically formulated to stick to sheet polyethylene.

2.6 DISPOSAL CONTAINERS

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

2.7 WARNING SIGNS AND LABELS

- A. Caution Signs: To be minimum of 20 x 14 inches and includes phrase "Caution Lead Hazard, Keep Out Unless Authorized" in minimum two-inch high letters. These shall be posted at each approach to each lead or removal Work Area or area where lead-related construction hot work is conducted.
- B. CAL/OSHA Lead Warning Posters: "Warning - Lead Work Area, Poison, No Smoking or Eating" shall be posted at the entrance to each Work Area.
- C. Labels: Hazardous waste shall be labeled according to 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.

2.8 PERSONAL PROTECTIVE EQUIPMENT

- A. Personal protective equipment shall comply with the requirements of Title 8 CCR 1532.1 Lead.
- B. Minimum protective clothing and equipment for lead-related construction work shall consist of fire-retardant, disposable, full-body coveralls, disposable boots, gloves, or equivalent in accordance with ANSI Z41. Sleeves at wrists and cuffs at ankles shall be secure.
- C. Eye protection and hard hats shall be available and worn at all times and shall conform to ANSI 87.1 and ANSI 89.1
- D. The Contractor shall provide Authorized Visitors with suitable disposable protective clothing, headgear, respirators, and footwear whenever authorized visitors are required to enter the Work Area. Up to an average of ten sets per day of suitable personal protective equipment shall be made available for authorized visitors.
- E. All disposable clothing worn during each work shift shall be removed prior to exiting the Work Area and shall be properly segregated and placed in container for proper waste characterization. The Contractor shall bear full responsibility for additional

costs associated with waste profiling and disposal if wastes are not properly segregated.

2.9 RESPIRATORS

- A. Provide workers with personally-issued respiratory equipment approved by NIOSH and suitable for the lead exposure level in the Work Area. Where respirators with disposable filters are employed, provide sufficient filter for replacement as required by the worker or applicable regulation. Each respirator shall be washed whenever the worker wearing it showers or at least daily prior to storage. The following general conditions shall apply to respirator use:
1. All respirators used must be certified by NIOSH and a respirator program shall be established and implemented.
 2. Respirators shall be used whenever airborne lead concentrations will exceed, or are likely to exceed, 50 mg/m^3 , and for any of the Trigger Tasks which have not been demonstrated to be below the PEL by initial monitoring, and for all operations involving the removal of LCP or welding on surfaces with paint or lead contamination regardless of airborne lead concentrations.
 3. Prior to initial monitoring, the level of protection shall follow CAL/OSHA requirements for the specific Trigger Task. Otherwise, the respirators worn shall be selected based on measured or reasonably expected airborne concentrations of lead as follow:
 - a. Half-face negative pressure air purifying respirator: up to 500 mg/m^3
 - b. Powered air purifying respirators: up to 50,000 mg/m^3
 - c. Type C supplied air respirator full face piece pressure demand mode: up to 100,000 mg/m^3
 4. Disposable respirators are not acceptable at any time. It is always permissible to upgrade to a more protective type of respirator.
 5. During all segments of LCP removal and clean up activities and hot work on LCP coated surfaces, respirator usage shall be required of all persons within the designated Work Areas at all times regardless of airborne lead concentrations.
- B. The Contractor is responsible for determination of airborne lead concentration levels for the Contractor's personnel and for providing and enforcing use of appropriate personnel respirator protection based upon airborne lead concentrations and this specification.
- C. Respirators shall not be removed inside the Work Area. Workers shall proceed to the designated washing area and clean the external surface of the respirator body before removing the respirator.

2.10 TOOLS AND EQUIPMENT

- A. Provide suitable tools for the removal of LCP and LCCM contamination including required HEPA exhaust systems, HEPA exhausted portable welding fume control systems, HEPA vacuums, ground fault circuit interrupters (GFCIs), ladders,

scaffold, garden sprayers and portable eyewash systems. All tools and equipment brought onsite shall be clean and free of lead and other hazardous material contaminants. HEPA vacuums shall be labeled with a lead warning label and dedicated to LCP work to prevent commingling of lead wastes with asbestos or other wastes. HEPA filtered exhaust systems shall be DOP tested on site to verify 99.97% effectiveness as an installed system and shall have accurate magnahelic gages to indicate filter performance while in use. Provide sufficient back-up equipment for use in the event of equipment failure. Ensure all equipment has been fitted with any necessary feasible noise attenuators to meet occupational and environmental noise standards for building occupants.

- B. Provide enough support equipment, including but not limited to, lumber, nails, hardware, shower stalls, hoses, plumbing, drain pans, sump pumps, and waste water storage drums to construct and operate the required hand washing system and portable Wash Room with showers. The number of showers shall be sufficient for the number of workmen scheduled on the job. The water hose used to connect the drain to the showers will not be used for any other purpose. The supply side water hose shall have a check valve to prevent back-flow under any circumstance.

PART 3 - EXECUTION

3.1 GENERAL

- A. Public Warning and Safety Information to be Posted
 - 1. Post signs at all approaches to the lead Work Area entrance to read "Caution Lead Hazard Keep Out Unless Authorized." In addition, post the CAL/OSHA Lead Hazard Warning Poster at the immediate Work Area entrance.
 - 2. A list of phone numbers for the local hospital and for emergency squad, the local fire department, a representative of the Contractor who may be reached 24 hours a day, the Contractor's main office, the District and the District's Environmental Consultant and any other professional Consultants directly involved in the project.

3.2 GENERAL PREPARATION FOR INTERIOR LEAD REMOVAL AND LEAD-RELATED CONSTRUCTION

- A. Move all non-fixed objects out of the Work Areas. Such items shall be moved at least five (5) feet from Work Areas.
- B. Pre-clean entire floor area and all horizontal surfaces inside and within five (5) feet of the Work Area using HEPA vacuums and wet methods.
- C. Cover all non-moveable objects within five (5) feet of the Work Area with six (6) mil polyethylene sheeting and seal with duct tape.
- D. Cover all floor, deck, scaffold or work platforms within the Work Area with two layers of six (6) mil polyethylene sheeting and seal with duct tape. Shut down, lock out, isolate the HVAC systems that supply, exhaust or pass through the lead control

area. All heater vents and registers shall be sealed with six (6) mil plastic sheeting and duct tape.

- E. Contain lead paint removal operations and hot work where lead containing paint is not completely removed at least 12" from welding or torch cutting in all direction with the use of a negative pressure full containment system with at least one change room and with HEPA filtered exhaust.
- F. Provide, at minimum, 10 foot candle illumination lighting to the Work Area.
- G. Install lead caution signage at each approach to the lead-related construction Work Area and lead warning signage just outside each Work Area entry/exit point.
- H. When Work Area preparation is complete, notify the District's Environmental Consultant and request an inspection. No work is to proceed in any Work Area until the general Work Area preparation materials, methods, and procedures have been inspected and approved by the District's Environmental Consultant.

3.3 GENERAL PREPARATION OF THE EXTERIOR LEAD REMOVAL OR LEAD-RELATED CONSTRUCTION

- A. Cordon off the Work Area extending at a minimum of 10 feet horizontally beyond the area of lead-related construction with barrier tape and warning signs as specified herein.
- B. Pre-clean visible suspect lead-containing dust and debris around and under areas where LCP or LCCM will be removed. Used HEPA vacuums and wet methods to perform this cleaning which shall include, at minimum, the designated Work Area.
- C. Cover ground and horizontal surfaces of Work Area (area within barrier tape) with a minimum of two layers of six (6) mil polyethylene sheeting. Secure the poly on the ground to the largest extent feasible. 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. Protection of horizontal surfaces shall be constructed to contain any water used to prepare exterior surfaces for re-painting.
- D. Protect windows, doors, and openings within the regulated area to the interior of the building with a minimum of one layer of 6-mil poly.
- E. Where LCP or LCCM components are likely to generate airborne dust or paint chips, devise a suitable containment to contain such dust and prevent dispersal by wind. Exterior removal which generates LCCM or LBP dust and debris shall not be attempted when wind is greater than 15 mph. To conduct exterior removal under windy conditions, the Contractor shall implement special, safe and effective countermeasures to ensure containment of LCP or LCCM dust and debris. These countermeasures include but are not limited to protective shrouds, mini-containment, or full scale containments on work platforms or scaffold.

- F. 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.
- G. Notify the District's Environmental Consultant when the Work Area is ready for inspection at the startup of each lead-related construction process not previously evaluated and approved by the District's Environmental Consultant. Lead-related construction work shall not initially proceed until the District's Environmental Consultant has checked and approved Work Area preparations.

3.4 WORKER PROTECTION AND DECONTAMINATION PROCEDURES

- A. The Contractor shall use only workers medically-qualified and trained for lead-related, hot work on LCCM surfaces, and respirator usage.
 - 1. Medically-qualified shall mean that the worker has had an occupational medical exam for lead exposure and respirator usage within 12 months of abatement start-up.
 - 2. The contents of the exam must be in conformance with Title 8 CCR 1532.1. In addition, each worker shall have had a blood-lead test within 30 days of starting work on the project. At no time shall the worker exceed six months between each blood-lead testing.
 - 3. Each abatement worker shall have successfully completed formal documented training in lead hazards and lead abatement methods meeting Title 17 California Department of Public Health (DPH) requirements. Non-abatement workers performing lead-related construction work shall have documented lead training in accordance with Title 8 CCR 1532.1.
 - 4. The Contractor's Competent Person for lead-related construction shall have received at least 40 hours of formal training by a Recognized Training Education Institution in lead hazards and lead abatement.
 - 5. The Contractor shall ensure that no worker is allowed onsite to perform lead removal or lead-related construction work until the District's Environmental Consultant has received and approved all of the worker's medical, training and fit testing certifications.
 - 6. Each worker and Authorized Visitor shall, upon entering the job site, enter the designated clean change room area and put on an inner and outer set of full body reusable or disposable coveralls, booties or shoe covers, respirator with HEPA filters, and gloves before entering the Work Area.
 - 7. Each worker and Authorized Visitor shall HEPA vacuum contamination from protective clothing and then remove shoe covers before leaving one Work Area for another Work Area inside the same building unless the Work Areas have been interconnected with a secured plastic sheet runway at least three feet wide.
 - 8. When exiting a Work Area, proceed to vacuum off all reusable work clothing and dispose of outer disposable protective clothing as suspect lead waste. Proceed to a designated wash area, remove and clean the respirator and store in a clean container.

9. At the end of the work day, all workers are to do the following in addition to those procedures described above: Place disposable outer garments and shoe covers in separate labeled waste containers dedicated to PPE for proper waste characterization; remove inner disposable clothing and place in waste containers; clean protective gear including respirator, shower or wash hands and face at minimum, and put on clean street clothes in the clean room area.
10. All tools and equipment shall be decontaminated by HEPA vacuuming and wet wiping prior to being taken out of the Work Area. Tools and equipment with inaccessible internals shall be externally wet-wiped, bagged and sealed prior to being removed from the Work Area.
11. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site within 20 feet of any Work Area as specified by the District or the District's Environmental Consultant.
12. Provide and post the decontamination and work procedures to be followed by workers in the clean area.
13. 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.

3.5 REMOVAL OF LEAD-CONTAINING PAINT BY CHEMICAL REMOVAL

- A. Removal of LCP using Chemical Removal system shall be approved for use by the District's Environmental Consultant.
- B. The Contractor shall provide additional security measures as necessary to ensure occupants cannot gain access to chemicals and chemically-treated surfaces.
- C. Material safety data sheets for each chemical substance and product used shall be onsite at all times and available for review by the workers and District's Environmental Consultant.
- D. The Competent Person shall review the contents of the material safety data sheets and the safe removal procedures with the workers prior to chemical removal.
- E. Workers shall wear chemical goggles, face shields, impervious gloves, aprons, and booties over the standard protective clothing prior to starting chemical removal.
- F. Stage or install temporary emergency eyewash capable of providing a 15-minute flush within the immediate Work Area if corrosive organic or corrosive inorganic paint removal (stripping) products are used. In addition, an emergency shower shall be available onsite within 50 feet of the removal operation.
- G. Chemical stripping agents (and neutralizers) shall be applied in accordance with the recommendations of the manufacturer. Remove all paint down to the bare substrate. Ensure that the chemicals used and the associated removal methods leave a clean and smooth surface capable of accepting a suitable primer/sealer coating after final cleaning. No paint or chemical residue shall be visible on the bare metal surfaces to be welded. All chemical residues shall be removed from surface applied.

- H. Containerize all paint and chemical waste in impervious containers labeled as hazardous waste.
- I. Package all contaminated rags and protective equipment, and disposable cleaning items and plastic sheets in labeled impervious containers and transfer waste containers to secure waste storage units. The Contractor shall assume all such waste to be hazardous unless proven otherwise by objective waste characterization data.
- J. Clean and decontaminate the Work Area in accordance with the procedures outlined herein.
- K. Decontaminate all tools and equipment before removing them from the Work Area. Seal or bag-up such equipment for transfer to the next Work Area or operation.

3.6 REMOVAL OF LCP BY MECHANICAL REMOVAL

- A. All mechanical removal equipment and systems shall be approved by the District's Environmental Consultant. Such equipment includes but is not limited to needle guns, abrasive wheels, and rotopeen equipment.
- B. All power tools shall be designed and equipped with effective HEPA-filter exhaust systems.
- C. The Contractor shall submit a separate work plan for containment of lead dust and debris emissions released by vacuum assisted power tools.
- D. Work Area preparation and LCP removal shall be in accordance with the approved work plan.

3.7 LCP REMOVAL BY ABRASIVE BLASTING METHODS

- A. All abrasive blasting equipment shall be of the vacublast type with effective capture and control of dust and debris using a built-in local HEPA Exhaust System. Alternative abrasive blasting systems are subject to approval by the District's Environmental Consultant.
- B. The Contractor shall submit a separate work plan for containment of fugitive dust and debris emissions. The plan shall include all equipment and products to be used.
- C. The Contractor shall be responsible for all permits and notices required for full compliance with local Air Pollution Control District rules and regulations.
- D. No work shall proceed until an approved abrasive blasting containment plan is approved and in place.
- E. Upon approval of a work plan and completion of Work Area preparation the Contractor shall conduct a pilot test to demonstrate the effectiveness of the hazardous control measures and the acceptability of the final product.

- F. The District's Environmental Consultant shall review the results of the pilot test prior to approving this method for remaining abatement work.

3.8 CLEANING AND DECONTAMINATION OF REMOVAL WORK AREAS

- A. Daily Clean up: Perform the following clean up procedures daily.
 - 1. Clean Work Areas until they are free of loose dust and debris to the satisfaction of the District's Environmental Consultant using HEPA and/or wet-wiping after pick-up of large debris.
 - 2. Wet debris with a fine mist of water and collect material. All material to be properly segregated, bagged in 6-mil plastic bags, sealed, and moved to a designated, secure, waste storage area for waste characterization.
 - 3. At the end of each work day the Contractor's Competent Person shall inspect work performed that day to ensure the work has been completed and no dust or residue remains on the areas removed and/or in the Work Area. The District's Environmental Consultant shall be included in that inspection process when and if they request inclusion.

- B. Final Clean up and Decontamination of Abatement Work Areas: At completion of abatement perform cleaning as follows:
 - 1. Remove all visible dust and debris as specified above.
 - 2. Clean all Work Areas where abatement was performed by vacuuming all surfaces with a HEPA vacuum followed by wet-wiping with a high phosphate (trisodium phosphate) wash or equivalent. The Contractor shall spray surfaces with a 5-10 percent trisodium phosphate (or approved equivalent) cleaning solution applied with a garden sprayer and wipe or mop surfaces with frequently changed clean towels, rags or mops.
 - 3. Disassemble and remove containment barriers at each Work Area location after cleaning as specified above. Place polyethylene sheeting and tape into waste bags and remove to the temporary waste storage area.
 - 4. Remove six (6) mil polyethylene sheeting on immovable objects and floors (where present) after misting with a high phosphate wash and wet-wiping. Place polyethylene sheeting and waste rags in segregated six (6) mil plastic bags, seal and store in a designated, secure, waste storage area for waste characterization.
 - 5. The cleaning procedure used shall prevent spread of contamination and effectively clean surfaces while producing minimal waste.
 - 6. All tools and equipment shall be sealed in six (6) mil plastic bags after being decontaminated using a high phosphate wash and wet-wiping prior exiting the Work Area
 - 7. Liquid cleaning wastes shall be filtered prior to containerizing for temporary storage pending hazardous waste characterization. Filter systems shall be able to remove particulate two microns and larger in diameter. Permits, if required, are the responsibility of the Contractor.

8. At least eight hours prior to completion of the first Work Area and again upon completion of final clean up and decontamination, notify the District's Environmental Consultant to obtain a final clearance inspection and testing.

3.9 FINAL CLEARANCE INSPECTION AND TESTING OF REMOVAL WORK AREAS

A. Interior Clearance Inspection and Testing.

1. After the final clean-up of each Work Area by the Contractor, the District's Environmental Consultant may conduct a visual inspection to ensure that all visible dust and debris has been removed. Contractor shall provide the District's Environmental Consultant at least eight hours notice prior to scheduling final inspections of each Work Area. If the results of the final visual inspection are satisfactory, the District's Environmental Consultant may proceed to collect clearance dust wipe samples.
2. If the Work Area is not visibly clean, as determined by the District's Environmental Consultant, the Contractor shall re-clean and decontaminate the Work Area as described herein at his own cost until the Work Area passes inspection.
3. The visibly clean Work Area shall not contain surface lead contamination at or in excess of 40 micrograms of lead per square foot for interior floor surfaces and 400 (ug/ft²) of surface sampled for exterior surfaces. Dust wipe samples will be taken using the HUD sampling protocol by the District's Environmental Consultant prior to or subsequent to the lead abatement or lead-related construction activities to assess adequacy of the Contractor's cleaning and decontamination procedures at the discretion of the District's Environmental Consultant.
4. Dust wipe samples will be collected using commercial wipes moistened with a non-alcohol wetting agent. Areas of approximately one square foot will be selected from horizontal surfaces below or adjacent to where LCCM's components or paint has been removed.
5. At a minimum, one dust wipe sample will be collected per representative abated area and sent under proper chain of custody protocol to an AIHA or ELLAP accredited laboratory or equivalent as specified by the District's Environmental Consultant.
6. All dust wipe samples will be analyzed for lead using either AAS or ICP-AES for lead and results will be provided to the Contractor within two days of receipt of sample results.
7. If any of the dust wipe samples exceed the clearance criteria, the entire Work Area must be cleaned and re-tested until the clearance criteria are met.
8. If a Work Area fails the clearance criteria specified above, the Contractor shall re-clean the entire Work Area at no additional cost and shall be responsible for any additional cost incurred by the District's Environmental Consultant for failed clearance tests. The Contractor shall pay all laboratory and delivery charges for additional dust wipe samples taken in each Work Area upon clearance failure.

- B. Exterior Clearance Inspection. After the final clean-up by the Contractor, the District's Environmental Consultant shall conduct a visual inspection to ensure that all visible dust and debris has been properly removed. The Contractor must provide the District's Environmental Consultant at least eight hours notice prior to scheduling final inspections. If the results of the final visual inspection are satisfactory to the District's Environmental Consultant, then the exterior Work Area shall be released for unrestricted access. If the results of the inspection are unsatisfactory the contractor shall re-clean and decontaminate the Work Area prior to requesting another inspection by the District's Environmental Consultant.

3.10 LEAD-RELATED CONSTRUCTION WORK

- A. Where the Contractor's work requires demolition of lead containing materials, materials coated with LCP the Contractor shall take the following precautions:
 1. Cordon off the work area with caution tape and lead warning signs.
 2. Protect workers in conformance with Title 8 CCR1532.1.
 3. Place a plastic drop cloth below the area where LCP paint chips or dust is likely to be released.
 4. Remove components using wet methods and/or HEPA vacuuming to control dust generated by mechanical cutting and/or disassembly. If torch cutting is required, remove the existing paint on all surfaces back at least 12 inches or more in each direction from the hot work as specified herein.
 5. Clean-up lead containing paint chips, dust, and debris as the removal proceeds and at the completion of work using HEPA vacuums and/or wet wiping. Clean all tools and equipment prior to removing them from the Work Area. Clean all polyethylene sheeting and horizontal surfaces prior to removing the sheeting.
 6. Special precautionary controls shall be used as necessary to prevent lead dust, debris or fume from being carried or blown out of the controlled area by wind or air currents. Torch cutting of components with inaccessible paint shall be done with HEPA filtered local exhaust ventilation to capture fumes unless monitoring data reviewed and accepted by the District's Environmental Consultant indicates local exhaust is not necessary.

3.11 LEAD CONTAMINATION OF BUILDING INTERIOR OR ENVIRONMENT

- A. In the event that removed LCCM paint, dust, or debris is not properly contained within the Work Area and thereby escapes, bypasses or penetrates established barriers, the Contractor shall stop work immediately, notify the District's Environmental Consultant immediately, and commence clean-up and decontamination procedures as described herein or directed by the District's Environmental Consultant.

3.12 WASTE STORAGE, SEGREGATION, AND CHARACTERIZATION

- A. The Contractor shall provide for secure onsite temporary storage of LCP or LCCM related waste. Waste storage location, equipment, containers and methods are subject to prior approval by the District and the District's Environmental Consultant.
- B. All lead-related waste streams and waste categories shall be considered hazardous until proven otherwise through testing by the Contractor. The Contractor shall be responsible for segregating waste into the below listed categories at minimum. If the Contractor allows different waste stream to become co-mingled, the waste will be classified as hazardous if any single component waste stream is hazardous.
 - 1. LCP removed by chemical stripping.
 - 2. LCP removed by mechanical methods.
 - 3. Demolition debris including painted plaster, wood, and metal with lead containing paint.
 - 4. Lead containing ceramic tile
 - 5. Paint (LCP) chips, dust and debris, HEPA vacuum waste.
 - 6. Plastic sheeting and tape.
 - 7. Disposable Protective Clothing and Equipment (PPE).
 - 8. Cleaning Rags.
- C. Intact LCP components: Architectural debris with intact LBP shall be considered hazardous until proven otherwise through testing.
- D. Each lead-related waste produced shall be placed in properly segregated, labeled and sealed, impervious containers.
- E. Removed intact LCP components shall be properly segregated, wrapped in six-mil polyethylene sheeting, labeled and securely sealed with duct tape or placed in a lined bin.
- F. All waste containers, bags, and packaged waste shall be stored in a designated, secure, locked waste storage area and be labeled with the following information:
 - 1. Waste Category: Lead
 - 2. Date Accumulated: (Insert Date)
 - 3. Name, address: (Insert Facility Name and Address)
 - 4. Origin of waste: (Insert Waste Stream Name, i.e. Paint Chips, Vacuum Bags)
- G. HEPA vacuum and wet-wipe the exterior of all waste containers prior to removing them from the Work Area to the designated storage area.
- H. Each category of waste, except components with intact paint, will be tested and characterized by the District's Environmental Consultant using one or more of the following testing protocols:
 - 1. CAL/EPA testing protocol: Criteria
 - a. Total Threshold Limit Concentration (TTLC): 1,000 ppm lead

- b. Soluble Threshold Limit Concentration (STLC): 5 ppm lead
 - 2. Federal-EPA testing protocol:
 - a. Toxicity Characteristic Leaching Procedure (TCLP): 5 ppm lead
- I. Based on the testing protocols, any waste greater than or equal to five (5) ppm lead using STLC or TCLP tests or any waste greater than or equal to 1,000 ppm lead using the TTLC test shall be considered a hazardous waste.
- J. When the TTLC test result is less than 50 ppm lead, no further testing is required for that waste category sampled unless the waste stream or waste generating process changes. A minimum of four samples will be taken to represent each category of waste generated. It will be the responsibility of the District's Environmental Consultant to ensure representative samples are taken by the Contractor from each category of segregated waste.
- K. The Contractor shall package, store, handle, transport and dispose of each category of waste generated based on the testing results unless specific written direction is provided by the appropriate regulatory agency and reviewed and approved by the District's Environmental Consultant. In all cases, the landfill shall be subject to approval by the District's Environmental Consultant.
- L. Upon verbal request of the District's Environmental Consultant, the Contractor shall provide samples of lead related waste to the District's Environmental Consultant. The Contractor shall provide samples within full view and presence of the District's Environmental Consultant.
- M. The cost of waste characterization or waste profiling required by the approved landfill will be the responsibility of the Contractor.

3.13 HAZARDOUS WASTE DISPOSAL:

- A. Site Storage and Handling:
 - 1. The Contractor shall pay strict attention to the requirements of 40 CFR 262 and 265 and Title 22, Chapter 30 for the onsite handling of lead waste/debris, with special attention given to the time of storage, amount of material stored at any one time, use of proper containers, and personnel training. All waste shall be stored in secure, locked, labeled, sealed impervious containers and not placed on the unprotected ground. All containers shall be shielded adequately to prevent dispersion of the debris by wind or rain and shall be labeled as hazardous waste. Any evidence of improper storage shall be cause for immediate shutdown of the project until a corrective action is taken.
- B. Transportation and Disposal of Waste:
 - 1. The Contractor shall arrange to have the LCP waste and debris 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, GISO 8 CCR Articles 40 and 41, 49 CFR Parts 172, 173, 178, and 179 and Title 22, Chapter 30, Articles 5, 6, 6.5 and 8.

2. The Contractor shall submit to the District and the District's Environmental Consultant the Name, Class, and EPA I.D. Number of the waste disposal site(s) to be used for each waste category which has been determined by testing to exceed the hazardous waste thresholds provided herein.
 3. The Contractor shall prepare waste shipping manifests for review by the District and the District's Environmental Consultant. Upon waste or material pickup by the selected waste transporter, manifests shall be signed by the District and copies retained to verify that all steps of the handling and disposal process have been completed properly.
 4. Copies of the landfill weight tickets shall be provided to the District and the District's Environmental Consultant to verify the amount of waste disposed of at that site. The Contractor shall be responsible for all costs associated with transportation and disposal of all wastes generated at the result of this work.
- C. No waste characterized as hazardous waste shall be stored onsite for more than 90 days prior to being properly transported for disposal.
- D. All equipment, materials, and waste generated on this project must be removed offsite to their proper locations by the Contractor within 14 calendar days from removal and lead-related construction work completion.
- E. Containers to be loaded for transportation from the storage area must be removed by workers who have entered from uncontaminated areas, dressed in clean coveralls.

3.14 STOP WORK ORDERS

- A. The District and/or the District's Environmental Consultant has the authority to stop work if it is determined that conditions or procedures are not in compliance with the specifications and/or applicable regulations; to the extent of potential endangerment of building users, workers, building occupants, District employees, the public or environment. The work stoppage shall remain in effect until conditions have been corrected and corrective measures have been taken to the satisfaction of the District and the District's Environmental Consultant. All standby time and testing costs required to correct the above mentioned problems shall be borne solely at the Contractors expense. Examples of such conditions that might result in a work stoppage include but are not limited to:
1. Uncontrolled visible emissions which escape the established Work Area or breach physical protective barriers within the Work Area; and/or,
 2. Ambient airborne levels of lead outside the construction area at more than 15 micrograms per cubic meters of air ($\mu\text{g}/\text{m}^3$) of lead averaged over an eight-hour work period or $5.0 \mu\text{g}/\text{m}^3$ for any 24 hour period. Measurements of the ambient airborne lead levels shall be made outside the immediate Work Area and at the nearest occupied areas.
 3. Unsecured Waste Storage Area and/or improper containment of lead abatement waste or LCP contamination.

3.15 CLOSEOUT

- A. Prior to approval of payment request, the Contractor must provide the following information:
1. Copies of workers' post-abatement medical test results and performed in accordance with Title 8 CCR 1532.1 Lead.
 2. Copies of hazardous waste manifest, profile sheets and weight tickets for all hazardous waste and for all non-hazardous waste or waste recycle receipts.
 3. All surface damages during the work must be restored to their original condition except those surfaces scheduled for demolition as part of the renovation project.

END OF SECTION 02 83 00

ATTACHMENT A
LEAD-RELATED WORK PLAN OUTLINE

In accordance with the contract documents, Cal-OSHA Lead in Construction Standard (Title 8 CCR 1532.1) and DPH (17 CCR Division 1, Chapter 8), the Contractor is required to prepare a written, site-specific Lead Compliance Plan, and submit to the District for approval prior to start of work. This plan is required for the contractor to meet Cal-OSHA and DPH requirements as well as the contract documents, and shall describe work procedures and control methods that will protect the District's facilities and the environment. All contractors performing lead-related construction work shall prepare plans.

I. Location of Work:

The work to be completed under this work plan will be completed at:
 (Building name)
 (Location within building)

II. Description of Work:

Describe the anticipated work scope, including:

- A. Paint removal (list paints or coatings, and locations)
- B. Paint stabilization or encapsulation (list paints or coatings, and locations)
- C. Removal and/or replacement of lead-coated components (list components and locations)
- D. Dust/residue removal or decontamination (list materials and locations)
- E. Demolition of lead-coated components
- F. Any other activities that will or may result in worker exposures to lead

III. Schedule:

Phase/Task	Anticipated Date(s)
Mobilization	_____
Set-up of work area(s), containments	_____
Lead-related construction	_____
Final Cleaning	_____
Visual Inspection	_____
Final Clearance (visual and sampling)	_____
Teardown	_____
Demobilization	_____

The competent person, _____, will conduct worksite visual inspections on a daily basis, or more often as necessary.

IV. Equipment and Materials

List all equipment and materials to be used, such as the following:

- | | |
|--------------|-------------------------------|
| HEPA Vacuums | Negative air filtration units |
| Scrapers | Manometers |
| Power saws | Shower facilities |
| Pry bars | Airless sprayers/compressors |

Cutting shears
Other hand tools
Encapsulants/sealants
Gloves
Respiratory protection

Cleaning detergents
Solvents (must be approved by District)
Roller/brushes
Disposable coveralls
Eye & foot protection

V. Crew

List all workers and supervisors with emergency contact names and phone numbers.

Clearly identify the supervisor and competent person who have authority for all safety and health.

VI. Control Measures and Work Practices

Describe in a narrative format specific work procedures, exposure/contamination controls, and engineering controls. This description should include, but not be limited to, the following:

Location, size, layout & detail of work

Negative pressure enclosure

Respiratory protection

Vacuum assisted blasting

Containment (i.e., poly barriers)

Methods to assure safety of bldg occupants

Removal method to reduce lead dust generation

Wet methods

Local exhaust ventilation for tools

HEPA vacuums

General room ventilation

Interface of trades involved

Pollution control

VII. Technology To Be Used In Meeting the OSHA PEL

List all or any specialized equipment to be used to meet the PEL.

VIII. Respiratory Protection and Protective Clothing/Personal Protective Equipment

List all respiratory protection including types and manufacturers which are anticipated for this project. Identify the phases of the project for which respirators will be required or likely to be required. List all personal protective equipment anticipated to be used on the project.

IX. Decontamination/Hygiene Facilities

Identify the types and locations of decontamination or hygiene facilities to be used on this project. Specify use of disposable towels, soap, hot and cold water, and other supplies. Specify the required use of the facilities, including use of the facilities prior to eating, drinking, smoking, and before leaving the project site. Describe handling or treatment of lead-contaminated solid waste and wastewater.

X. Air Monitoring Data

Identify general worker air monitoring protocols to be followed on this project, including worker category classifications, frequency of monitoring, anticipated laboratory to be used for analysis, pump calibration techniques, etc. Identify the competent person responsible for conducting personal air monitoring.

XI. Medical Surveillance Program