

SECTION 02080

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.
- C. A copies of the RGA Asbestos and Lead Survey Reports for the subject areas scheduled for remodel are available to the Contractor for reference when complying with these specifications including:
 - 1) Student Services Remodel Asbestos and Lead Report dated April 20, 2011
 - a. L-612 Registration Area
 - b. L-612 Advisor Offices 2nd and 3rd floors
 - c. L-612 Mezzanine
 - 2) L-612 Miscellaneous Services Remodel Asbestos and Lead Report dated May 31, 2011
 - a. L-612, Office of Instruction/2nd Floor Interim Remodel
 - i. Testing and Assessment
 - ii. English Classrooms
 - b. L-612, Business and Central Services Remodel
 - c. L-612, Student Life Renovations (modular) (No ACM)
 - d. L-612, Admissions and Records (Areas near Dining Room Only)

1.2 SCOPE OF WORK

- A. Provide the removal of ACM 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. Estimated quantities of ACM to be removed as part of each phase of planned remodeling are provided on the following Tables:
 - Table I L-612, Registration, Offices, and the Mezzanine Remodel
 - Table II L-612, Office of Instruction/2nd Floor Interim Remodel
 - Table III L-612, Business and Central Services Remodel
 - Table IV L-612, Admissions and Records

- C. The Contractor is responsible for field verifying the quantities of ACM provided in the Tables of this specification. A 10% or less variance in the quantity of actual ACM abated as compared to the estimated quantities provided in the Tables of this specification will not be considered a changed condition and will not be grounds for a change order.
- D. ACM to be disposed of as friable, hazardous, regulated asbestos-containing material (RACM) may include: acoustical wall or ceiling texturing, pipe insulation and associated mudded elbows, asbestos core doors, flooring mastic (if removed with mechanical methods) and all Category I and Category II ACM rendered friable during the removal process.
- E. ACM to be disposed of as non-friable, non-hazardous Category I or Category II ACM (if they are not rendered friable during removal) may include: floor tile, flooring mastics (removed by manual methods), wall panel adhesive, caulking, sinks with intact underside coatings, and asphalt roofing materials. If a chemical solvent is used to abate flooring mastic, the Contractor shall perform appropriate waste characterization and dispose of the material as required.
- F. Throughout the L-612 Student Services Registration Area, associated offices, and mezzanine, joint compound reported to contain <1% chrysotile asbestos associated with non-textured non-ACM drywall was observed behind wood paneling. After re-analysis of composite samples of the drywall "wall systems," by the "point count method" it has been reported by the analytical laboratory that this material contains less than one percent asbestos by volume. As a result, the removal of this material would be considered "unclassified" asbestos work and the resulting waste may be disposed of at a Class II landfill as non-friable, non-hazardous asbestos containing construction debris.
- G. On the walls of the 2nd floor computer classrooms of the L-612 Student Services Registration Area Remodel, wall texturing (surfacing material) on fibrous non-ACM wall panels was observed, sampled, and reported by the laboratory as containing <1% chrysotile asbestos. After re-analysis of the wall texturing by the "point count method" the analytical laboratory reported the material to contain less than one percent asbestos by volume. As a result, the removal of this material would be considered "unclassified" asbestos work and the resulting waste may be disposed of at a Class II landfill as non-friable, non-hazardous asbestos containing construction debris..
- H. Any dust or debris generated from cutting, drilling, and removal or installation of attachments to existing ACM shall be disposed as RACM.

**TABLE 1
ASBESTOS-CONTAINING MATERIALS
TO BE ABATED AS PART OF
L-612 STUDENT SERVICES REGISTRATION AREA REMODEL**

| Material Description | Material Location | Asbestos Type | Quantity |
|--|---|--|-----------------|
| Joint Compound on Drywall (smooth surface) | Student Service throughout (behind wood panels) | Construction Debris with <1% asbestos Wall board: ND Joint compound: <1% Point Count --- Joint Compound: 0.50 % CH | 50,000 sf |
| Joint compound on fiber board panel | Student Services 2 nd floor – Computer/Classrooms Perimeter walls | Construction Debris with <1% asbestos Joint Compound: <1% CH Point Count - Joint Compound: 0.25% - 0.75% CH | 3,000 sf |
| 4" Blue Cove Base glue – Brown | Student Services 3 rd floor Room 435 | Construction Debris with <1% asbestos Glue: <1% TR Point Count: 0.50% TR | 100 lf |
| Sink Coating Underside (brown, smooth) | Student Services 3 rd floor Room 411 | Category I Sink Coating: 2% CH | 5 each |
| | Student Services 3 rd floor Room 487 | Category I Sink Coating: 3% CH | 4 each |
| 12" white w/black smudge vinyl floor tile and black mastic | Student Services Mezzanine Kitchen #488 And (3) Labs #487A | Category I (unless removed by mechanical means) Floor Tile: <1% CH Black Mastic: 3% CH | 150 sf |
| Brown adhesive on 1" ceiling tiles | Student Services Mezzanine Rooms 483, and adjacent rooms | Construction Debris with <1% asbestos Ceiling Tile: ND Adhesive: <1% CH Point Count - .50% CH | 600 sf |

CH = Chrysotile, ND = None Detected, N/A = Not Applicable, sf = Square feet, lf = Linear Feet

**TABLE 2
ASBESTOS-CONTAINING MATERIALS
TO BE ABATED AS PART OF
L-612, OFFICE OF INSTRUCTION/2ND FLOOR INTERIM REMODEL**

| Material Description | Material Location | Asbestos Type | Quantity |
|--|--|---|-----------------|
| Sink Coating Underside (brown, smooth) | Office of Instruction Kitchen | Category I Sink Coating: 3% CH | 1 each |
| Rubbery material on duct tape painted silver | Office of Instruction Roof HVAC Ducting | Category I 4% CH | 100 lf |
| Adhesive | 2 nd floor Room 292 English behind wall-mounted chalk board | Category I Assumed >1% CH | 100 sf |

CH = Chrysotile, ND = None Detected, N/A = Not Applicable, sf = Square feet, lf = Linear Feet

**TABLE 3
ASBESTOS-CONTAINING MATERIALS
TO BE ABATED AS PART OF
L-612, BUSINESS and CENTRAL SERVICES REMODEL**

| Material Description | Material Location | Asbestos Type | Quantity |
|--|--------------------------|--|-----------------|
| Asphalt roofing under gravel | Roof | Category I Asphalt Membrane 10-20 % CH | 7,840 sf |
| 12" vinyl floor tile and black mastic (2 layers) | Hallways | Category I Floor Tile: <1% CH Black Mastic: 3% CH | 400 sf |

CH = Chrysotile, ND = None Detected, N/A = Not Applicable, sf = Square feet, lf = Linear Feet

TABLE 4

**ASBESTOS-CONTAINING MATERIALS
TO BE ABATED AS PART OF
L-612, ADMISSIONS and RECORDS INTERIM REMODEL**

| Material Description | Material Location | Asbestos Type | Quantity |
|------------------------------|----------------------|--|--|
| Asphalt roofing under gravel | Roof (Two Levels) | <p style="text-align: center;">Category I Asphalt Membrane 10-20 % CH</p> | <p style="text-align: center;">5,400 sf (portion only)</p> |

CH = Chrysotile, ND = None Detected, N/A = Not Applicable, sf = Square feet, lf = Linear Feet

1.3 COMPLIANCE AND INTENT

- A. 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 work the start of abatement work on each floor and any pathways of travel on other floors.
- C. Project includes the abatement of asbestos-containing materials (ACM). It is necessary for the Contractor to coordinate all abatement work with the project drawings and specifications. During all work, the Contractor will provide asbestos exposure 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. Work covered by this specification includes the handling, removal, and proper disposal of ACM. 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 cleanups of any incidental asbestos found in areas undergoing abatement of asbestos that become separated from the building during the dismantling process are part of the work.
- E. Abatement workers shall have received Cal-OSHA accredited training and be certified for asbestos abatement work.
- F. Contractor shall 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. Contractor shall 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. Contractor shall complete 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 areas to be abated.
- 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's Environmental Consultant 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 and/or re-cleaning at no increase to contract price.
- K. Contractor is responsible for field verifying the quantities ACM to be abated, as listed in Table 1 and Table 2 of these Specifications, prior to commencement of the project. The Contractor shall conduct a site visit to determine the exact locations of these materials. This section provides appropriate protocols for handling and disposal of ACM. All ACM shall be removed according to the procedures outlined in this specification. If the Contractor discovers additional suspect ACM during abatement, the District and/or the District's Environmental Consultant shall be immediately notified.
- L. Contractor completing abatement work will possess a current, valid asbestos handling license issued by the State of California Contractors State Licensing Board (CSLB) 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 other specified. Copies of CSLB license and Cal-OSHA Registration are to be posted in a visible place at the job-site.
- M. ACM and non-ACM materials removed during the abatement activities must be packaged, transported, and disposed of in compliance with all applicable federal, state, and local regulations. Appropriate waste manifests, waste shipment records, and/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 non-ACM hazardous waste disposal site(s) prior to removal from the site.
- N. All interior asbestos abatement work shall be conducted using negative pressure enclosures and attached three-stage decontamination units, unless otherwise specified. The removal of exterior ACM shall be conducted in a regulated work area

surrounded by poly drop sheets and asbestos warning signs. Exterior ACM removed using mechanical methods or aggressive methods that may render the ACM friable must be removed from within a negative-pressure enclosure. The removal of asbestos-containing roofing materials shall be completed using wet methods and hand tools with no visible emissions or liquid runoff to storm drains. Evidence of the release of asbestos above the background level will necessitate additional controls including but not limited to an enclosure.

1.4 DEFINITIONS

- A. The following definitions pertain to work of this section.
1. Abatement: Process of controlling fiber release from ACM 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 airborne asbestos fibers measured prior to the start of abatement activities.
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 post-abatement air samples analyzed by PCM will be less than 0.01 fibers per cubic centimeter of air and by TEM will be less than 70 structures per square millimeter ($<70 \text{ s/mm}^2$). Samples may be collected by aggressive or non-aggressive sampling methods with the minimum air volume to 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, formerly used as a challenge aerosol to perform on-site leak testing of HEPA filtration equipment. This agent has been proven to be a human health hazard, so if leak testing is done only the equivalent test method using oily smoke may be used.
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:

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS
RQ WASTE ASBESTOS, 9 NA 2212 PG III
(Class 9 placard)
HAZARDOUS WASTE
STATE AND FEDERAL LAW
PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST
POLICE OR PUBLIC SAFETY
AUTHORITY OR THE CALIFORNIA
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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 ACM 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 ACM 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 fiber 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 ACM.

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, fill and concrete.
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 fiber 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 face piece 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 transmit 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.

1.5 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. BAY AREA AIR QUALITY MANAGEMENT DISTRICT
REGULATION 11 – Hazardous Pollutants,
RULE 2 – Asbestos Demolition, Renovation and Manufacturing
- L. Underwriters Laboratories, Inc. (UL)
1. UL 586-96, 1996 Test Performance of High-Efficiency Particulate Air Filter Units

1.6 ASBESTOS ABATEMENT CONTRACTOR PRE-WORK SUBMITTALS

- 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. Prior to commencing each Phase of asbestos-related work, the Contractor shall submit the following documents/information to the District and/or the District’s Environmental Consultant for their review and approval:
1. A detailed asbestos abatement work plan formatted as Attachment A – Asbestos Abatement Work Plan Outline.
 2. A site specific safety plan that describes, at a minimum: known site safety and health hazards; fiber release controls; control of water leakage or discharge within and/or from the work area; medical emergency; asbestos handling procedures; fall protection; electrical safety; 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. Records of Designated 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. Records of Asbestos Workers: Demonstrate education and specialized training with successful completion of a Cal-OSHA accredited asbestos training course. All site workers shall submit proof of current Class IV training. All workers that will likely disturb existing ACM during restoration work and removal or installation of components shall submit evidence of current Class III training.
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. Copies of Medical Examination Records: 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.
8. Copies of Written Notification to Fire and Police Departments: Provide documentation showing notification to local fire and police departments of the abatement three (3) days before commencement.
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 equivalent leak 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, in accordance with Regulation 11, Cal-OSHA, and Title 40 CFR Part 61 Subparts A & M, National Emission Standards for hazardous Air Pollutant, U.S. EPA.

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's representative prior to acceptance of final pay request and shall include the copies or originals of:
 1. 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 analytical laboratory reports for all bulk and area air samples collected during project.
 3. Supervisor reports of emergency evacuations and any other safety or health incident.
 4. 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 analytical results.
 6. Pressure differential strip chart readings for each differential recording device on the site.
 7. 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. Name of DOP equivalent testing vendor and records of date/s of testing with test results.

1.8 CONTRACTOR MONITORING

- A. The District or District’s Environmental Consultant reserves the right to conduct site inspections and air sampling during the course of the project. District or District’s Environmental Consultant reserves the right to stop work if the District or District’s Environmental Consultant observes substantial non-conformance with the provisions of this Specification that present potential 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:
 - 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 abatement work area during all phases of the work. The Contractor shall cooperate fully with the District’s Environmental Consultant and ensure the cooperation of their workers during collection of air samples and work area inspections.
- C. When visual inspections or air monitoring are to be scheduled, 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
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED 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 legend:

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 gage 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 continuous circular chart 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 strip chart recorder will be checked a minimum of four times per day by a person familiar with the operation. Each check shall be documented on the circular chart with a time and date notation and the initials of the person performing the check. A copy of the circular chart 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 connected to an appropriate strip chart recorder. 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 VISITORS:

- A. 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.
- B. 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 WATER HEATER:

- A. The hot water supply must be adequate to allow for 15 minutes of continuous usage while maintaining a water temperature of 85 F°. At minimum provide UL rated 40-gallon electric water heater to supply hot water for the decontamination unit shower. Provide relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Drip pans shall consist of a 24 inch X 24 inch X 6 inch deep pan, made of 19 gauge galvanized steel with handles. Drip pan shall be securely fastened to the water heater with bailing wire or similar material. Wiring of the water heater shall comply with NEMA, NEC and UL standards.

2.13 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 perimeter air sample results indicate that fiber counts exceed 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 excessive fiber counts 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. 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 on 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. Store all materials, equipment, and supplies for the project inside the building or in areas designated by the District and in accordance with District requirements.
- H. Establish designated limits for the abatement work area with continuous barriers. Use barrier tape (3-inch) with a pre-printed asbestos warning throughout exterior asbestos abatement activities. Provide signs around the perimeter of all the interior works areas according to EPA and Cal-OSHA.
- I. 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 unless otherwise authorized by the District.

- J. Identifying all HVAC components (if applicable) connected to the work area. All HVAC 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.
- L. Protect fixed objects with protective barriers (as appropriate) and cover with 6 mil poly sealed with tape.

3.2 CONTAINMENT SET-UP PROCEDURES

- A. Containment is not required for exterior work including removal of asphalt roofing materials, window putties, exterior stucco, window sealants and duct mastics if removed in a non-friable state. However, all asbestos work shall be conducted within an asbestos regulated area as required by Cal-OSHA. Contractor shall seal operable windows and air intakes within 50 feet of the work area with two layers of 6-mil polyethylene sealed with tape.
- B. Contractor shall construct a negative pressure enclosure for the removal of asbestos-containing materials from building interiors including, but not limited to, pipe insulation and mudded elbows, vinyl floor tiles and associated mastic, acoustical texturing, acoustic ceiling tiles, HVAC duct mastic, joint compound on non-ACM drywall, and base coving. Install critical barriers consisting of one layer of 6-mil poly on windows and doors. Cover floor and wall surfaces with 6-mil poly sealed with tape (as appropriate). Cover floors first so that plastic extends up the walls at least 12 inches, then cover walls with 6-mil poly to the floor level, thus overlapping the floor material by a minimum of 12 inches. Pony walls shall be constructed with 6-mil poly if the perimeter walls of the containment area do not extend to the deck above. The work area(s) shall be placed under negative pressure as outlined in this specification throughout the abatement work period.
- C. Any disturbance of ACM must be performed within a regulated area. If dust or debris is generated from asbestos related activity, work must be performed in a mini-enclosure with negative pressure or critical barrier containment.
- D. To permit the inspector to view the majority of the work area, the Contractor shall provide easily accessible viewing ports from a clean space outside of each abatement area. Viewing ports must be a minimum of 2' x 2' in size and consist of a clear see-through plastic with no scratches, tape or glue marks.
- E. Pressure differential recorders with strip charts are required to monitor the pressure differential of a negative pressure enclosure. The recorders must be calibrated prior to arriving on site and be re-calibrated monthly until abatement completion and clearance. Re-calibration shall be performed by qualified technicians following the procedures outlined by the manufacturers. Provide documentation of calibration before beginning work and monthly thereafter.
- F. A three-chambered decontamination unit is required for each negative pressure enclosure, unless an alternative is authorized. The unit shall be located immediately

outside the contained area. A pre-fabricated unit is acceptable. Chambers shall be arranged as follows: (1) a clean/change room shall be the first chamber entered from outside the work area, (2) a shower shall be located between the clean/change room and the dirty/change room, and (3) a dirty/change room shall be the last chamber before entering the work area.

1. The clean/change room of the worker decontamination unit shall be of sufficient size to accommodate the work crew and their belongings. It shall include a respirator storage area and be fully equipped with reserve equipment and materials such as clean suits, towels, soap, tape, and respirator filters.
 2. Worker decontamination unit walls shall be a minimum of two layers of 6-mil fire retardant poly and floors shall be constructed with a minimum of three layers of fire retardant poly. All entry and exit doorways shall consist of at least two sheets of overlapping, fire resistant poly. At no time shall the flapped doors be taped open in order to expedite material or personnel load-out.
- G. All water from the shower and bag wash area shall be filtered to the technically feasible limit but not more than five (5) microns before disposal. In addition, the Contractor shall comply with all current local, state and federal codes relating to waste water release. All water connections must be verified leak for leaks and turned-off at the conclusion of each shift. All shower water shall be drained from the shower pan at the end of each shift.
- H. 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.
- I. Contractor shall construct an equipment decontamination enclosure system consisting of a washroom, holding area and clean room separated by airlocks.
- J. 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.
- K. A decontamination area shall be established on the roof for abatement of asphalt roofing materials. Decontamination area shall include a wash area. All wash water shall be captured and disposed or filtered as specified above.

3.3 PERSONNEL PROTECTION

A. Informed Workers:

1. All workers shall be informed of the hazards of ACM 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 ACM. 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 thermal systems insulation and: full-face powered-air purifying respirators (PAPRs) with HEPA cartridges and organic vapor cartridges (as necessary).
 - c. Asbestos abatement of drywall with asbestos containing joint compound, floor tile mastics, HVAC duct sealant, asphalt roofing products, duct sealants, window sealants, asbestos core fire doors and other 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> |
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| 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 (100 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 (1,000 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. Shower Requirements: Contractor shall assure that all certified employees and visitors use protective equipment and the shower or wash down facility following each entry into the containment area after the start of the asbestos abatement.
- G. 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 ACM 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 ACM that generate airborne particulate. To the extent feasible, score or cut-out ACM 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. 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. All drywall debris with ACM joint compound shall be stored in clear, leaktight

containers and properly labeled while stored on-site. All other products with asbestos content (<1%) shall be packaged in leaktight containers while stored onsite. No specific labeling is required.

- E. 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 ASBESTOS REMOVAL (GLOVEBAG TECHNIQUE)

- A. Bags commercially manufactured specifically for glovebag enclosure removal of asbestos shall be used. All bags shall be a minimum of 6 mil clear poly, appropriately sized for removal area and task.
- B. Maximum temperature of components allowable for glovebag work shall be as specified by glovebag manufacturer. Glovebag procedures shall not be permitted on live steam equipment or any equipment in excess of 150 degrees Fahrenheit.
- C. Pre-clean the work area and protect immediate work area by covering floor and nearby equipment with 6 mil poly. Temporarily wrap damage/deteriorated asbestos insulation adjacent to the work with 6 mil poly to prevent further damage or disturbance during removal.
- D. Provide two (2) workers for each glovebag operation.
- E. Install glovebag around pipe, seal with staples and tape leaving enough sealed space above the pipe to allow access. Secure bag to pipe to support weight of stripped insulation and water (additional support may be provided by a chair or ladder).
- F. Insert HEPA vacuum nozzle and flexible tubing or wetting agent sprayer into hole location provided and seal airtight with duct tape.
- G. Smoke test the glovebag and repair leaks as required.
- H. During removal, periodically use HEPA vacuum to compensate for any leaks and wet the inside surfaces of the bag to control fiber release.
- I. Cut the insulation sharply for neat sealing of exposed insulation. Leave 4 inches margin at the bag/seal point.
- J. After removal and detail cleaning, wash down all surfaces to below the levels where the bag will be sealed, and saturate the waste.
- K. Upon completion of the removal work but prior to commencing with encapsulation, the District or District's Environmental Consultant reserves the right to conduct visual inspections.
- L. Seal all substrate surfaces from which asbestos material was removed with an approved encapsulant.
- M. Gather tools in a glove hand and pull the glove inside out. Seal the arm with a minimum of six (6) inches of tape and cut through the middle of the tape. Bend and

re-tape the ends. Save the “bagged” tools for the next glovebag operation or clean by placing in a pail of water.

- N. Collapse the bag with the HEPA vacuum. With the vacuum still applied, seal the bag just above the glove level. Remove the nozzle and tubing. Place a 6 mil waste bag over the glovebag and carefully remove the glove bag from the component and immediately seal it in a labeled waste bag. Check the component for loose waste and vacuum as required.
- O. Seal exposed insulation with fiberglass wettable cloth or other approved material while the insulation is damp, unless other removal is planned.

3.6 ASBESTOS ROOFING REMOVAL

- A. Establish a regulated area consisting of barrier tape and asbestos warning signs at least 10 feet from the work area. The edge of the roof can be considered one such barrier if sufficient controls have been established to prevent loss of roofing debris from the roof.
- B. Provide a decontamination enclosure system at the point of entry/exit to the roof area.
- C. Seal off openings within 50 feet of the work area including ducts, grills, and windows.
- D. Utilize fall protection and safety devices at all times during roof work whenever exposed to falls greater than six feet including at perimeter, shaft or skylights.
- E. Weather conditions should be dry and wind conditions less than 15 mph for roof and other exterior abatement activities. Establish a waste storage area where sealed bags of roofing materials are stored during removal. Line the storage area with a layer of 6-mil polyethylene sheeting. Dampen the roof surface with a fine spray of amended water before proceeding with removal. Keep roofing damp throughout the removal process. Cut, peel, and scrape the roofing materials as required to remove the largest pieces possible in layers. Continue the removal until the roof decking is reached. Remove contaminated sleepers, flashing, and counter flashing as applicable.
- F. Place all removed asbestos roofing materials in waste bags or containers. All waste shall be removed from the roof at the end of each workday. In no case shall waste disposal containers be dropped or thrown. All ACM waste disposal containers shall be handled in a careful manner to prevent spills.
- G. Acceptable clearance criteria for roofing removal shall be no visible three-dimensional residue at removal locations. The District or District’s Environmental Consultant reserves the right to conduct visual inspections at the completion of the work.

3.7 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.

3.8 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.

3.9 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 District's Environmental Consultant 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.

3.10 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.

3.11 ASBESTOS DISPOSAL

- A. It is the responsibility of the Contractor to comply with 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. The driver of the vehicle must stop the vehicle in a safe location at least once during each two hours or one hundred miles of travel whichever is less and inspect the contents of the shipment. At the time of inspection if any form of binding is found to be loose the driver shall immediately take action to remedy the situation for safe transportation.
- 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 at a District approved landfill that meets EPA requirements.

END OF SECTION 02080

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 ACM 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) |
|---|---------------------|
| 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, and 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 02086

UNIVERSAL WASTE 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 UNIVERSAL WASTE MATERIALS

- A. The following Universal Waste (fluorescent light tubes) must be properly removed and disposed of/recycled as part of each phase of L-612 Student Services remodeling:

| REMODEL PHASE | LOCATION | QUANTITY |
|--|---|---|
| L-612, Student Services Registration Remodel | Registration Areas 2 nd & 3 rd Floors and Mezzanine | 138 x 2-ft tubes 134 x 3-ft tubes 1416 x 4-ft tubes 6 x 8-ft tubes |
| | Office of Instruction Building (Kitchen and Office) | 8 each 4-foot tubes |
| | 2 nd Floor Testing and Assessment | 116 each 4-foot tubes |
| | 2 nd Floor English Classrooms | 98 each 4-foot tubes |
| L-612, Business and Central Services Remodel | Business Services | 44 each 4-foot tubes 43 each 2-foot tubes |
| | Central Services | 54 each 4-foot tubes |
| L-612, Student Life Renovations | Student Life Relocation (modular building) | 32 each 4-foot tubes |
| L-612, Admissions and Records Interim Remodel | Admissions Areas | 24 each 4-foot tubes |

1.3 COMPLIANCE AND INTENT

- A. This Section specifies requirements for removal of Universal Waste (UW) materials. The Contractor shall coordinate all abatement work with the specifications. During all work, provide monitoring and worker protective equipment in accord with the California Occupational Safety and Health Administration (Cal-OSHA) and as required by this section and all other sections of the Specifications. Where there is conflict, the most stringent requirement shall apply.
- B. The work covered by this specification includes the removal of UW including, but not limited to, fluorescent light tubes, thermostat switches, manometers, vacuum gauges, non-incandescent lamps, batteries, smoke detectors and cathode ray tubes (CRTs).
- C. All work shall comply with Environmental Protection Agency (EPA) rules and regulations governing UW: 40 CFR 273, as published in the most recent edition of the Federal Register. Additionally, all work and work related practices shall comply with applicable Federal, State and local rules and regulations including, but not limited to, the California Department of Industrial Relations, California Code of Regulations (CCR) Title 8, Division 1, Chapter 4; Department of Health Services, CCR Title 22, Division 4.5 and California Health and Safety Code, Division 20. Where conflicts occur, compliance shall be based upon the most stringent requirements.
- D. Workers involved in the removal of UW shall have received specific training on the hazards, appropriate personal protection and decontamination procedures associated with UW.
- E. Furnish all labor, materials, facilities, equipment, services, employee training, medical monitoring, permits and agreements necessary to perform the work required for UW abatement in accordance with this specification.
- F. Perform all work specified herein with competent persons trained, knowledgeable and qualified in state-of-the-art techniques relating to UW abatement, handling, and the subsequent cleaning of contaminated areas.
- G. Perform appropriate waste profile testing for all potential hazardous UW waste as required by this specification, the regulations, and the selected disposal/recycling facility. All testing shall be done in the presence of the District or District's Environmental Consultant. Chain-of-custody forms shall be provided to the District within one (1) day following sample delivery to the laboratory.
- H. During removal activities, the Contractor shall protect against contamination of soil, water, plant life, and adjacent building areas, and shall ensure that there is no release of hazardous materials.
- I. It is the Contractor's responsibility to determine the quantities of UW impacted by the planned demolition work. The Contractor shall conduct a site visit to determine exact locations of materials impacted by the demolition work.

- J. UW removed during the abatement activities shall be handled, transported and disposed/recycled in an approved manner complying with all applicable federal, state, and local regulations.

1.4 DEFINITIONS

- A. Certificate of Disposal: The document provided to the generator certifying that the UW wastes were disposed/recycled in strict accordance with all applicable Federal, State and Local regulations.
- B. Chain-of-Custody: A legal concept involving documentation of the physical possession of a sample/samples from the moment it is collected, transported, analyzed, and ultimately stored in an archive.
- C. 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.
- D. 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.
- E. DOP: Dioctylphthalate, the challenge aerosol used to perform on-site leak testing of HEPA filtration equipment.
- F. 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.
- G. District: Contra Costa Community College District
- H. District's Environmental Consultant: Environmental Consulting firm and its representatives retained to provide compliance oversight and monitoring for the Contractor's universal waste abatement work activities.
- I. 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.
- J. HEPA: High Efficiency Particulate Air filter capable of filtering out airborne particulate 0.3 microns or greater in diameter at 99.97 percent efficiency.
- K. Manifest: The document authorized by both Federal and State authorities for tracking the movement of hazardous wastes.
- L. 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.
- M. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

- N. Returned Bill of Lading: An original duplicate copy of the bill of lading provided to the waste generator within forty-five (45) days of the transport date which acknowledges the receipt of the material at the disposal facility.
- O. Universal Waste: This waste has three categories: CRTs, thermostats, batteries and lamps (fluorescent tubes, discharge lamps, mercury vapor lamps, batteries (not auto), and mercury thermostats.
- P. Visual Inspection: A visual inspection by Environmental Consultant, of the work area under adequate lighting to ensure that the work area is free of visible material, debris, and dust.

1.5 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. The following items shall be submitted to, and approved by, the District or District's Environmental Consultant before commencing work involving the UW abatement.
1. Provide a detailed work plan for UW that follows Attachment A – Universal Waste Work Plan Outline.
 2. Provide a site safety plan for UW abatement prior to project initiation. The site safety plan shall deal with, at a minimum: personal protective equipment; site safety and health hazards; UW spills; control of water leakage or discharge within and/or from the work area; medical emergency; materials handling procedures; 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. Workers: Demonstrate education and specialized training
 4. 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.
 5. Licenses: Submit copies of state and local licenses, evidence of Cal-OSHA registration and permits necessary to carry out the work of this contract.
 6. Material Safety Data Sheets/Specification Sheets: The Contractor shall submit Material Safety Data and Specification Sheets for all materials and equipment to be used for this project.
 7. 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 or District's Environmental Consultant.

1.6 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 or District's Environmental Consultant 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 work areas. The logs shall include date and time of entry and exit, supervisor's record of any accident (detailed description of accident).

2. Emergency evacuations and any other safety or health incident.
3. Bill of Lading including Land Disposal Restrictions Notice and Certification.
4. Project Summary including, but not limited to, the following: location and approximate quantity of UW removed, hazardous waste hauler certifications, waste disposal/recycling facilities, dates of commence and completion of on-site work.

PART 2 - PRODUCTS

2.1 SIGNS:

- A. Warning signs for work areas shall be approximately 18 inches square with yellow background and 1 inch black letters. Signs shall read "DANGER – KEEP OUT – TOXIC CHEMICAL WORK AREA".
- B. Location of Signs: Provide bilingual 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.

2.2 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.
 4. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

2.3 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.

2.4 MATERIALS AND EQUIPMENT:

- A. Storage Containers:
 1. All UW fluids, UW-contaminated fluids, including flush and cleaning solvents and mixtures, shall be stored in sealed DOT 17E closed top drums or other waste container approved for storage of these materials.
 2. All UW solid wastes and items including disposable items used in the course of the work such as rags, absorbents, protective clothing, etc., shall be stored in sealed DOT 17C open type drums or other waste container approved for storage of these materials.

3. Any UW Article Container, other than approved DOT drums, specified in this specification, intended for storage, shall be submitted to the District or District's Environmental Consultant for approval.
- B. Solvents, Cleaning Agents and Absorbents:
1. Solvents: An appropriate solvent in which UWs are shown to be soluble in. Care should be taken to limit the complexity of the waste stream. In all cases where solvents are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.
 2. Cleaning Agents: An appropriate cleaning agent in which UWs are shown to be soluble in. Care should be taken to limit the complexity of the waste stream. Numerous, non-toxic, cleaning agents shown to meet or exceed the solubility requirement above are commercially available. In all cases where cleaners are used in the course of work, proper ventilation shall be provided by the Contractor to insure that resulting fumes/vapors are not dispersed to occupied building areas either as a result of natural convection or via air intakes for building ventilation systems. The manufacturer's recommendations for application and requirements of Cal-OSHA shall be strictly observed.
 3. Absorbents: "Safestep" as manufactured by Andesite of California, Inc., or approved equal.

PART 3 - EXECUTION

3.1 SAFETY PROCEDURES AND WORKER PROTECTION

- A. Take all precautions and measures required to protect employees, inspection personnel, District's on-site personnel and the general public from exposure to UW solids, liquids and vapors.
1. All personnel authorized for entry in work areas shall be instructed in the proper procedures for working with or around electrical hazards and UW containing/contaminated materials.
 2. All electrical equipment upon which UW related activities are to be performed shall be de-energized, locked out/tagged out and permanently disconnected from any power source prior to the commencement of the work.
 3. Consumption of food or tobacco products shall not be permitted in any of the project work areas where UWs, volatile solvents and/or other hazardous materials are present. Additionally, no open flames will be permitted in these same areas. Signage to this effect shall be provided for each work area.
 4. The Contractor performing the work of this Contract shall develop, together with applicable subcontractors, a contingency plan covering accidental UW spills and work exposure to UWs. The plan shall be submitted to the District or District's Environmental Consultant prior to commencing UW-related work. The

submittal shall also include a separate section to describe the hauler's spill contingency plan and avoidance procedures.

- B. Work Area Protection and Marking: Prior to commencing any UW-related work activities provide barricades and warning signs to clearly identify and effectively guard against unauthorized entry into the work areas.
 - 1. Place barricades to maintain a minimum of 25 feet from all perimeters of the work being conducted to the barricades, where feasible.
 - 2. All equipment such as tools, containers, etc., shall be confined to the work area until work is complete, containers are sealed and equipment properly decontaminated and safely stored for transport.

- C. Protective Clothing and Equipment: At all times when UW fluids or mixtures in any volume are not sealed in drums, containers or electrical equipment, workers shall wear:
 - 1. Gloves impermeable to both UWs and the solvent and/or clean up agent in use.
 - 2. Disposable, full body suit, impermeable to both UWs and the solvent and/or clean up agent in use.
 - 3. Appropriate eye protection to insure that eyes are protected from liquid splatter or exposure to concentrated vapors or fumes.
 - 4. Respiratory protection appropriate for the concentration of the hazardous material(s) and atmosphere present. Supplied air must meet requirements for Grade D air, at a minimum.
 - a. The Contractor shall provide protective clothing, eye protection, and breathing apparatus as required for authorized inspection personnel upon request.
 - b. Pre-cleaning, containment set-up, and containment removal work: NIOSH-approved, half-face respirators with double stack Organic Vapor/HEPA cartridges.
 - c. Interior abatement of UWs. Powered-Air Purifying respirators (PAPRs) with double stack Organic Vapor/HEPA cartridges.
 - d. All exterior UW work: NIOSH-approved, half-face respirators with double stack Organic Vapor/HEPA cartridges.

- D. Personnel Protection and Procedures: The UW work area shall at no time be left unattended from the commencement of remediation work and until all UWs and incidentals have been sealed in approved containers. If immediate transportation to the UW storage facility or disposal facility is not feasible the work area must be secured in a manner approved by the District or District's Environmental Consultant.
 - 1. During work procedures and at all times when UW containing/ contaminated fluids in any volume are not sealed in drums, containers or electrical equipment, all personnel entering the regulated work area must don protective clothing and equipment. Upon exiting the work area, all disposable protective clothing shall be placed in appropriate waste storage drums and sealed, for subsequent transportation to the on-site storage facility or disposal facility.

2. Workers with cuts or scratches shall seal these wounds sufficiently to prevent accidental contact of the hazardous materials within the regulated work area prior to entering the regulated work area. Similarly, workers who accidentally incur minor cuts or scratches in the course of work activities shall immediately leave the work area, cleanse the wound with medical grade soap and seal the wound before returning to the work area.

3.2 SPILL CLEAN-UP, CONTAINERIZATION AND MARKING

A. Clean-up of Work Area, UW Articles and Spills:

1. **Equipment and Tools:** After the last UW has been removed and all fluids and solids cleaned from fixture, all tools and equipment used in the work shall be decontaminated and properly stored for reuse. All tools that may have come in contact with UW at any concentration shall be thoroughly double washed/rinsed with an appropriate cleaning agent, wiped clean and properly stored.
2. **UW Contaminated Articles:** All exterior surfaces of equipment that may have come in contact with UW or contaminated solids or fluids either during the course of work activities or due to past leaks shall be double washed/rinsed, at a minimum, with an appropriate cleaning agent and wiped clean.
3. **Solid Impenetrable Surfaces:** All metal surfaces and surfaces with impervious liners which have come in contact with UW or UW mixtures in the course of the work or as a result of past leaks shall be thoroughly cleaned using a combination of absorbents and solvents or cleaning agents. Minimum cleaning requirements for these surfaces include removal of bulk material and two rinses with the cleaning agent of the surfaces, which come in contact with UW or UW mixtures in the course of the work or as a result of past leaks. The work area shall be effectively ventilated during operations such that vapors used in decontamination and cleaning are not vented to occupied building areas. Upon completion of UW-related activities, if fumes or vapors are still present in levels, which could impede breathing or be considered toxic under State and/or NIOSH standards, the Contactor shall provide additional ventilation to accelerate drying. Auxiliary breathing apparatus may only be used by personnel trained in the use of this equipment and experienced in conducting electrical work while wearing equipment, which could impede safe work practices.
4. **Soils and Porous Materials:** The U.S. EPA, Region IX, regards soil, asphalt, wood, cement and concrete as porous materials that absorb UW. Where practicable, these materials must be removed when they are within the spill or contamination boundary.
5. **Decontamination Verification:** Completion of decontamination activities will be verified by the District or District's Environmental Consultant.

B. Containerization and Marking:

1. All liquid generated as a result of work activities and clean up operations shall be placed in appropriate waste containers and the containers sealed.

2. All solids such as absorbents, rags, disposable protective clothing, soils, and other incidentals shall be placed in appropriate waste containers and the containers sealed.
3. All drums shall be permanently marked as to specific contents and dated. In addition, each drum (and container) shall be marked with appropriate EPA, UW label(s) that comply with Federal and State Regulations.

3.3 HANDLING AND TRANSPORTATION TO STORAGE FACILITIES

- A. Drums: All closed and open top drums must be permanently sealed, marked and labeled prior to loading on transport vehicle. Filled drums shall be loaded on the transport vehicle by any of the following methods.
 1. Hoist or lift truck utilizing a two-point drum lifter
 2. Hoist or lift truck provided with a band-around type drum lifter
 3. Lift truck lifting the drums from underneath by a pallet attached to the drum by a banding arrangement.
- B. Drums shall not be lifted by the following methods.
 1. Any rope, chain or cloth slings tied about the drum.
 2. Placement of drums on bare lift truck forks.
 3. Forcing drums between forks of a lift truck.
 4. Any commercial drum lifters exerting force of the sides of a drum.
- C. All drums or article containers shall be secured to the transport vehicle to prevent movement in transport.

3.4 TRANSPORTATION TO DISPOSAL FACILITY

- A. General: All UW Articles removed and all drums containing liquids, solids and incidentals shall be transported to the off-site District approved recycling/disposal facility utilizing District approved haulers.
 1. The Contractor performing the work of this section shall be licensed for the transportation and hauling of extremely hazardous wastes. The Contractor shall provide a route plan, which clearly identifies the routes proposed while transporting UW items from the work site to the off-site facilities.
 2. A minimum of two operators shall be in attendance at all times when UW items are being transported, loaded and unloaded.
- B. The rules in this section apply to each motor carrier engaged in the transportation of hazardous materials by a motor vehicle, which must be marked or placarded in accordance with DOT 177.
- C. Every motor vehicle transporting or storing Articles and items containing UWs or hazardous materials must be operated in compliance with the laws, ordinances and regulations of the state jurisdiction of which it is being operated in, unless they are at variance with specific regulations of the Department of Transportation which are applicable to the operation of that vehicle which impose a more stringent obligation or restraint.

- D. No person may smoke within 25 feet of any Contractor's vehicles, which contains flammable materials (flushing solvents), or an empty tank motor vehicle, which has been used to transport flammable materials.
- E. When a motor vehicle, which contains hazardous materials is being fueled its engine must not be operated.
- F. Motor vehicles transporting UWs or hazardous materials must have all containers properly secured in place to insure that no equipment items or containers can be loose or unsafely placed into the transport vehicle. This may include chaining, roping or strapping and winching. The driver of the vehicle must stop the vehicle in a safe location at least once during each two hours or one hundred miles of travel whichever is less and inspect the contents of the shipment. At the time of inspection if any form of binding is found to be loose the driver shall immediately take action to remedy the situation for safe transportation.
- G. Any equipment, drums or other Articles carried in an open, flatbed or stake type truck shall be covered with a tarp to protect it from the elements.
- H. A motor carrier that transports hazardous waste must furnish the driver of each motor vehicle in which the waste is transported with the following documents.
 - 1. A copy of this specification section
 - 2. A document containing instructions on procedures to be followed in the event of accident or delay. The documents must include the names and telephone numbers of persons to be contacted, and the substances of the hazardous wastes being transported, and the precautions to be taken in emergencies such as fires, accident or leakages.
 - 3. Bill of Lading and permit documents described in this specification and required for waste transport.
- I. A motor vehicle being operated must be marked if that vehicle is transporting UWs or hazardous materials of a kind that require the vehicle to be marked or placarded in accordance with DOT 177.

3.5 UW DISPOSAL

- A. The Contractor shall treat and dispose of all collected UW wastes collected and generated during the execution of this Contract including Articles, fluids, etc. as set forth this specification.
- B. Except as may be otherwise specifically directed by the District or District's Environmental Consultant, the Contractor shall treat and dispose of the waste UW materials as governed by 40 CFR 273, California State regulations, local regulations and subsequent amendments.
 - 1. By incineration or recycling at a facility approved for such use by the U.S. EPA, and all other controlling regulatory agencies and bodies of the state, county and municipality of that facility's location all UW fluids, flushing fluids, and other UW contaminants. If preapproved by the District, waste contaminated solids may also be incinerated as suitable and allowed for this type of disposal.

- C. All UW wastes generated as part of these operations will be disposed of by the Contractor in a legal manner.
- D. The Contractor shall not sell, transfer or recover any material from the wastes received from the District without their prior written consent.

3.6 BILL OF LADING AND RECORDS

- A. The Contractor shall provide the District or District's Environmental Consultant with a certificate of disposal verifying that all waste received by it has been properly treated and disposed.
- B. The Contractor shall provide the District or District's Environmental Consultant copies of all Bill of Ladings, permits or other documents currently in effect relating to the specific UW wastes to be transported, treated and disposed hereunder except as otherwise stated in this Section. The Contractor shall also promptly furnish to the District or District's Environmental Consultant copies of all new or renewal permits or other documents applicable to this agreement as soon as the Contractor receives same.
- C. The Contractor shall furnish complete Bill of Ladings for all UW Articles to be collected from the facility at which the removal and decontamination occurred. The District or District's Environmental Consultant shall sign the Bill of Ladings. These Bill of Ladings shall accompany the waste loads to disposal and be properly completed by the hauler and disposal agent as required by Federal and State hazardous waste management law. The final Bill of Lading shall then be returned by registered mail to the District or District's Environmental Consultant within 30 days.
- D. The contract work will not be considered complete nor will the District make final payment until the District or District's Environmental Consultant receives certifications of incineration (for fluids) and/or recycling.

3.7 PLACEMENT IN STORAGE AND RECORDS

- A. Drums and Articles shall be placed in the storage facility in locations as directed by the District or District's Environmental Consultant.
 - 1. Articles shall be placed such that ample clearance is provided around equipment to facilitate future inspection.
 - 2. Drums shall be placed on pallets of sufficient strength to withstand double stacking. Drums shall not be stacked at time of storage unless space is limited as determined by the District or District's Environmental Consultant. Where stacking of drums is necessary, pallets shall be placed between the drum layers.
 - 3. Immediately following unloading of the UW transport vehicle, the cargo area shall be inspected to check for fluid leaks. If any fluids are found, the source of the leaking drum or items shall be identified and sealed. The contamination cargo area shall be thoroughly double washed/rinsed clean with absorbents, solvents and liquid cleaner. Cleaning agents, solvents and solids shall be placed in proper drums for disposal.

- B. Records: Upon completion of all UW work related activities the Contractor shall provide a complete record of such activities and storage data to the Safety Officer or other administrator responsible for UWs at the site. In addition, two copies of the record shall be transmitted to the District or District's Environmental Consultant. The record shall include the following data:
1. Name of the firm performing the work of this Section and technician in charge.
 2. Drum sizes (30 or 55 gallon)
 3. Identification of contents (liquids, flushing solvent, cleaning solvents for solids, rags, absorbents, soil, etc.)
 4. Weight in kilograms and gallons of contents of each drum or container.
 5. Date placed in storage.

END OF SECTION 02085

**ATTACHMENT A
UNIVERSAL WASTE WORK PLAN OUTLINE**

In accordance with the contract documents, the Contractor is required to prepare a written, site-specific Universal Waste 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)

II. Description of Work:

Describe the anticipated work scope

III. Schedule:

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

IV. Equipment and Materials

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

| | |
|------------------------|------------------------------|
| HEPA Vacuums | Gloves |
| Hand tools | Manometers |
| Solvents | Cleaning Agents |
| Absorbents | Airless sprayers/compressors |
| Respiratory Protection | 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.

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, and smoking and before leaving the project site. Describe handling or treatment of 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.

X. Containment Diagram

Include a diagram (hand written is acceptable) of the containment(s) showing the containment perimeter in relation to the surrounding areas and decontamination areas.

XI. Waste

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

XII. Preparation of Universal Waste Work Plan

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