Notice is hereby given to all prospective bidders that plans and specifications on the subject project are modified as hereinafter set forth. This Addendum shall be attached to and form a part of the plans and specifications. All bidders must acknowledge receipt of this addendum on the Bid Form. In case of difference with previous addenda or communications, this addendum takes precedence.

It is the responsibility of all bidders to notify all subcontractors from whom they request bids and from whom they accept bids of all changes contained in this addendum.

PROJECT MANUAL

1. Item No. PM2-1
   Reference: Appendix B- Hazardous Material Specifications

END OF ADDENDUM ITEMS

ATTACHMENTS:
   Project Manual:
       Appendix B-Hazardous Materials Specifications, dated 02/12/2019
HAZARDOUS MATERIALS ABATEMENT SPECIFICATIONS
SAN FRANCISCO UNIFIED SCHOOL DISTRICT
LONGFELLOW ELEMENTARY SCHOOL EXIT BALCONY AND FIRE LIFE SAFETY ADDITION PROJECT
755 MORSE STREET
SAN FRANCISCO, CA 94112

PREPARED FOR:
SAN FRANCISCO UNIFIED SCHOOL DISTRICT
FACILITIES DESIGN & CONSTRUCTION
135 VAN NESS AVENUE
SAN FRANCISCO, CA 94102

PREPARED BY:

SCA
ENVIRONMENTAL, INC.

1 LAKESIDE DRIVE, SUITE 215
OAKLAND, CA 94612
TEL: (510) 645-6200

SCA PROJECT NO.: B-12831

FEBRUARY 12, 2019
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Total No. of Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 31 26</td>
<td>Existing Hazardous Material Information</td>
<td>6</td>
</tr>
<tr>
<td>02 26 00</td>
<td>Asbestos and Lead Related Work Plan</td>
<td>14</td>
</tr>
<tr>
<td>02 82 33</td>
<td>Removal and Disposal of Asbestos-Containing Materials</td>
<td>26</td>
</tr>
<tr>
<td>02 83 33</td>
<td>Removal and Disposal of Material Containing Lead</td>
<td>20</td>
</tr>
</tbody>
</table>
DOCUMENT 00 31 26

EXISTING HAZARDOUS MATERIAL INFORMATION

TABLE OF CONTENTS

1.1 SUMMARY ................................................................................................................................................... 2
1.2 HAZARDOUS MATERIALS REPORT(S) .................................................................................................. 2
1.3 HAZARD SUMMARY ................................................................................................................................. 2
1.4 USE OF DATA .............................................................................................................................................. 5
1.5 PRE-BID VISIT TO WORK SITE .................................................................................................................. 6
PART 1 - GENERAL

1.1 SUMMARY

A. This Document discloses Reference Documents that are available to the Contractors regarding the hazardous materials investigations and/or past hazardous materials remediation work that was utilized by the District and its Consultant(s) in preparing the Contract Documents.

1.2 HAZARDOUS MATERIALS REPORT(S)

A. The Contractor’s attention is directed to the fact that a hazardous materials survey reports were prepared for the site and is known as:

1. Non-destructive Asbestos & Lead-Based Paint Survey conducted by SCA Environmental, dated February 12, 2019 [SCA Project No. B-12831].

B. Copies of the above referenced report(s) may be reviewed at the District’s Asbestos Control Program offices at 135 Van Ness Avenue, 4th Floor, and San Francisco, CA.

1.3 HAZARD SUMMARY

A. Asbestos Hazards: Certain existing building components or materials, which may be impacted by the Work of this Project, are known or presumed to contain asbestos. Referred to the attached sketches for layout of the site under the District’s AHERA surveys.

1. The following materials were tested and found to contain asbestos at concentrations greater than one percent (>1%):

   a. Pipe insulation on straight runs, elbows and tees [Sample I.D. PI-1].

   b. Ceramic wall tiles, cove base and window sills with associated glue [Sample I.D. WLCER-2].

   c. Gray/off-white interior and exterior window putty at North, South and East walls [Sample I.D. PUTTY-3].

   d. Black interior and exterior caulking around windows at North, South and East walls [Sample I.D. CAULK-4].

   e. Asphalt paving and associated coatings at all paved areas throughout campus [Sample I.D. ASPHALT-5].

2. Materials assumed to contain asbestos include the following:

   a. Assumed fire-rated core in firedoors [Sample I.D. FIREDOOR-AAA1].
b. Black waterproofing tar/coating below concrete slabs and sub-grade perimeter walls [Sample I.D. VAPBAR-AAA2].

c. Transite underground sewer, water and drain piping [Sample I.D. PI-AAA3].

3. The following suspect asbestos-containing materials were tested or documented and found not to contain asbestos:

a. Skimcoat and basecoat plasters at walls, columns, trim and ceilings [Sample I.D. WLPL/CLPL-6].

b. 12”x12” Glued-on wall and ceiling tiles [Sample I.D. CLGL-7].

c. Ceiling sheetrock above CLGL [Sample I.D. CLSH-8].

d. Tack boards and associated glue [Sample I.D. BOARD-9].

e. Fiberglass pipe insulation [Sample I.D. PI-10].

f. Terra cotta floor and base cove tile, grout and mortar [Sample I.D. FLCER-11].

g. Fiberglass with masonite backing acoustical wall panels in Multi-purpose room 113 [Sample I.D. WLAC-12].

h. Paint and skimcoat on concrete walls, columns, retaining walls and stairs [Sample I.D. PAINT-13].

i. Black exterior window putty at windows at West walls [Sample I.D. PUTTY-14].

j. Black exterior caulking around windows at West walls [Sample I.D. CAULK-15].

k. Beige vinyl floor sheeting with jute backing on concrete slab [SCA Sample I.D. FLVCS-1-1 and 2].

l. Brown and green painted concrete walls and columns [SCA Sample I.D. CONC-2-1 thru 3].

m. Brown soil under concrete sidewalk (~12 inches deep) [SCA Sample I.D. SOIL-3-1].

n. Gray concrete sidewalk [SCA Sample I.D. CONC4-1 and 2].

o. Gray concrete walls and ceilings [SCA Sample I.D. CONC-10-1 thru 3].

p. Black gasket between flanges of water supply pipe valves [SCA Sample I.D. GASKET-11-1].

q. Green gasket between flanges of water supply pipe valves [SCA Sample I.D. GASKET-12-1].
Existing Hazardous Material Information

SCA Project No.: B-12831 Longfellow Elementary School
Exit Balcony and FLS Addition Project
2/12/19

r. Beige caulking around security screen of wall vents [SCA Sample I.D. CAULK-13-1 and 2].

s. Gray concrete walkway [SCA Sample I.D. CONC-14-1 and 2].

u. Gray concrete sidewalk [SCA Sample I.D. CONC-16-1 and 2].

B. Lead Hazards: Certain existing painted or coated surfaces to be impacted by the Work of this Project are known or suspected to contain lead.

1. The following paints, coatings, or materials were tested and found to contain lead at concentrations at or above the U.S. Department of Housing and Urban Development (HUD) definition of a lead-containing material, established as greater than or equal to one milligram per square centimeter (≥1.0 mg/cm²) or greater than or equal to one-half percent lead by weight (≥0.5%) or greater than or equal to five thousand parts per million (≥5000 ppm).

a. Paint on metal handrails, guardrails and support brackets [Sample I.D. PAINT-1, with 1.0 mg/cm²].

b. Paint on metal door frames and transom frames [Sample I.D. PAINT-2, with 1.0 – 2.2 mg/cm²].

c. Paint on metal window sash, frames and panels at North, South and East walls [Sample I.D. PAINT-3, with 1.0 – 3.8 mg/cm²].

d. Paint on metal security screens on windows and louvered vents [Sample I.D. PAINT-4, with 1.0 mg/cm²].

e. Paint on fire sprinkler piping and supports [Sample I.D. PAINT-5, with 1.0 mg/cm²].

f. Paint on gas piping and supports [Sample I.D. PAINT-6, with 3.0 mg/cm²].

g. Paint on metal window sash, frames and sills at North, South and East walls [Sample I.D. PAINT-7, with 1.0 – 1.6 mg/cm²].

h. Paint on metal heater covers [Sample I.D. PAINT-8, with 1.0 mg/cm²].

2. The following materials were not all tested but, the Contractor, for the purposes of this Contract and for Cal/OSHA (8 CCR 1532.1) and Cal/EPA (Title 22 CCR) compliance shall assume and manage them as lead containing.

a. Plumbing components, such as pipes, fittings and solders.

b. Roof flashings.

c. Caulking.
d. Mastic and adhesives.

e. Ceramic tile glazing.

f. Battleship linoleum flooring.

3. The following materials were tested and the concentrations of lead were found to be below the HUD definition of lead a containing material, namely as greater than or equal to one milligram per square centimeter (<1.0 mg/cm²) or greater than or equal to one-half percent lead by weight (<0.5%) or greater than or equal to five thousand parts per million (<5000 ppm). For OSHA compliance, therefore, the Contractor shall assume that, at a minimum, some lead is “present” in all these materials and that they have the potential, until proven otherwise, to create a lead hazard.

a. All other painted substrates throughout.

4. The District has not verified that any paints, coatings, dusts, or materials are “lead free” or below 600 ppm therefore all “trigger 1” construction activities, such as demolition of painted surfaces, manual scraping or sanding of painted surfaces, or renovations impacting painted surfaces and primed structural steel shall be completed using dust controls and personal protective measures in compliance with the Cal/OSHA Construction Lead Standard, 8 CCR 1532.1. All settled dust within ductwork, ceiling plenums, crawl spaces, attics, chases and non-regular housekeeping areas shall be treated as having a lead content greater than 600 ppm requiring dust controls in compliance with 8 CCR 1532.1 during [demolition] [renovations].

C. Other Hazards:

1. Biological Hazards requiring compliance with Cal/OSHA’s Bloodborne Pathogen standards, include, but are not necessarily limited to:

   a. Pigeon or animal waste.

1.4 USE OF DATA

A. Environmental consultation was obtained only for the use of the District and its Consultants for planning and design stages of this Project. The above mentioned report(s) are not, as a whole, part of the Contract Documents, but the survey data contained therein can be relied upon by the Contractor to characterize general site conditions, although quantities, friability and other factors may have changed or been altered since the published report date(s).

B. All statements, findings, and interpretations in the above mentioned report(s) are those of the Survey or Abatement Consultant(s). The District makes no representations, either expressed or implied, as to the completeness or adequacy of the above-mentioned reports. Contractors are advised that the limited testing of components allow for generalizations in describing the extent of hazardous materials. Specific components or materials, should be checked against the referenced survey report(s) and the Contract Documents, or be tested at affected locations, prior to disturbance of such components or materials.
C. Contractors shall visit the work site and acquaint themselves with its existing conditions. Difference in conditions, if any, shall be brought to the District’s attention prior to bidding.

1.5 PRE-BID VISIT TO WORK SITE

A. Prior to bidding, Contractors may make their own investigations to satisfy themselves as to the Site and subsurface conditions, but such investigations shall be performed only under the provisions [of Article “Pre-bid Conference and Site Access” of the Instructions to Bidders (Document 00100)] [set by the District during the Bid Walk Phase].

END OF DOCUMENT 00 31 26
SECTION 02 26 00

ASBESTOS AND LEAD RELATED WORK PLAN

TABLE OF CONTENTS

PART 1 - GENERAL
1.1 SUMMARY OF WORK ................................................................. 1
1.2 SUBMITTALS ............................................................................ 2
1.3 SCHEDULE .............................................................................. 3
1.4 CONTACTS ............................................................................... 3
1.5 SECURITY .................................................................................. 3
1.6. SPECIAL CONDITIONS .......................................................... 4
1.7 SUMMARY OF SAMPLING RESULTS: ................................. 5

PART 2 - PRODUCTS (MATERIALS AND EQUIPMENT) ............ 6

PART 3 - EXECUTION ..................................................................... 7
3.1 STANDARD PROCEDURES .................................................. 7
3.2 LEAD HAZARD PROCEDURES ............................................ 10
3.3 MONITORING AND REOCCUPANCY TESTING ................ 12
3.3 APPROVAL ............................................................................... 13
SECTION 02 26 00
ASBESTOS AND LEAD RELATED WORK PLAN

PART 1 - GENERAL

1.1 SUMMARY OF WORK

The work covered by this work plan includes the removal, handling and disposal of various hazardous materials in accordance with applicable federal, state and local regulations at the Longfellow Elementary School Exit Balcony and Fire Life Safety (FLS) Addition Project in San Francisco, CA.

A copy of this Abatement Work Plan is to be posted on-site during the abatement work.

The Abatement Summary of Work includes the following (as designated)

<table>
<thead>
<tr>
<th>X__</th>
<th>Removal and disposal of asbestos-containing materials (ACM) and asbestos-containing building/construction materials (ACBM / ACCM) as part of the District’s Renovation Program for Longfellow Elementary School, including but not necessary limited to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Removal and disposal of pipe insulation on straight runs, elbows and tees</td>
</tr>
<tr>
<td></td>
<td>• Removal and disposal of ceramic wall tiles, cove base and window sills and associated glues</td>
</tr>
<tr>
<td></td>
<td>• Removal and disposal of gray and off-white interior and exterior window putty</td>
</tr>
<tr>
<td></td>
<td>• Removal and disposal of black interior and exterior caulking around windows</td>
</tr>
<tr>
<td></td>
<td>• Removal and disposal of asphalt paving and associated coatings at all paved areas</td>
</tr>
</tbody>
</table>

| X__ | Scraping and stabilization of loose and peeling paints and associated dust controls and personal protective procedures in compliance with Cal/OSHA’s Construction Lead Standard, 8 CCR 1532.1, CDPH regulation 17 CCR Sections 35001 through 36100 and the EPA’s RR&P rules, as applicable, for renovation, demolition and/or repairs to painted substrates. |

| X__ | Spot abatement and disposal of wastes for primers and lead-containing paints on structural steel elements prior to torching, cutting, etc., including dust controls and personal protective procedures in compliance with Cal/OSHA's Construction Lead Standard, 8 CCR 1532.1, CDPH regulation 17 CCR Sections 35001 through 36100 and the EPA’s RR&P rules, as applicable. |

**Warning** - Surfaces or building materials scheduled for torch cutting or other "hot" work may have previously been coated with lead containing paints. Spot removal of paints may not be sufficient to completely control lead fume release. The contractor is required to:

1. use the appropriate equipment and work practices to prevent lead releases and possible exposures to hospital patients, visitors, and staff;
2. protect or clean surfaces so that dislodgeable lead contamination (i.e. contamination which can be identified by wipe sampling) is not left behind, and take appropriate measures to protect their employees against lead exposures.
Drilling through lead-based or lead-containing paints using associated dust controls and personal protective procedures in compliance with Cal/OSHA's Construction Lead Standard, 8 CCR 1532.1, CDPH regulation 17 CCR Sections 35001 through 36100 and the EPA’s RR&P rules, as applicable, for renovation, demolition and/or repairs to painted substrates, including:
- Drilling through lead-containing paint of existing walls, ceilings, and door components, etc.

Clean-up of building dust and contamination for clearance inspection.

For Controlled Renovation Projects: Use of controlled renovation procedures for drilling, coring and anchoring through asbestos-containing materials in accordance with 8 CCR 1529.

For Controlled Renovation Projects: Use of dust controls during drilling, coring and anchoring through materials with lead-based paints (LBPs) or lead-containing paints (LCPs) as required per 8 CCR 1532.1.

For Controlled Renovation Projects: Clean-up of building dust and contamination for reoccupancy dust sampling.

### 1.2 SUBMITTALS

#### Pre-job Submittals (as designated):

<p>| | |</p>
<table>
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<th></th>
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</table>
| X | Drilling through lead-based or lead-containing paints using associated dust controls and personal protective procedures in compliance with Cal/OSHA's Construction Lead Standard, 8 CCR 1532.1, CDPH regulation 17 CCR Sections 35001 through 36100 and the EPA’s RR&P rules, as applicable, for renovation, demolition and/or repairs to painted substrates, including:
| X | Clean-up of building dust and contamination for clearance inspection. |
| X | For Controlled Renovation Projects: Use of controlled renovation procedures for drilling, coring and anchoring through asbestos-containing materials in accordance with 8 CCR 1529. |
| X | For Controlled Renovation Projects: Use of dust controls during drilling, coring and anchoring through materials with lead-based paints (LBPs) or lead-containing paints (LCPs) as required per 8 CCR 1532.1. |
| X | For Controlled Renovation Projects: Clean-up of building dust and contamination for reoccupancy dust sampling. |
| X | BAAQMD Notification (10-working days in advance). |
| X | Cal/OSHA Asbestos Abatement Notification per 8 CCR 1529 (twenty four (24) hours in advance). |
| X | Notification and distribution of EPA’s “Renovate Right” pamphlet per EPA’s RR&P rules. |
| X | Copy of current Contractors’ State Licensing Board (CSLB) License. |
| X | Copy of Cal/OSHA Asbestos Registration Certificate. |
| X | Proof of all required permits or variances. |
| X | Abatement work schedule. |
| X | Asbestos and lead-related work plans. |
| X | Copies of workers' and supervisor's asbestos initial training certificates or 8-hr. annual refresher training certificate. |
| X | Copies of workers' annual 2-hr. asbestos training signed by independent trainer or Contractor’s Safety Officer. |
| X | Copies of CDPH Certified Lead Worker's and Supervisor's training certificates, as applicable; |
| X | Copies of workers' annual medical exam and respirator approval. |
| X | Copies of workers' twelve (12) month respirator fit testing records. |
| X | Copies of workers' blood lead test within past ninety (90) days. |
| X | Safety Data Sheets (SDS) for chemicals used. |
| X | Emergency phone and pager listing. |
| X | Independent third-party DOP testing of negative pressure units and vacuums. |
| X | Proposed location of locked dumpster. |
| X | Rotameter calibrations within past six (6) months. |
Periodic Submittals (as designated):

- [x] Personal air monitoring (daily).
- [x] Updated worker documentation (as needed).
- [x] Boundary access logs (daily).
- [x] Negative pressure records (daily).
- [x] Copies of updated notification to regulatory agencies (as needed).

Project Close-out Submittals (as designated within two (2) weeks of completion):

- [x] Certificate of Completion.
- [x] Receipt and weight tickets from landfill operator or recycler (as applicable).
- [x] Copies of completed uniform waste manifests, including hazardous and non-hazardous waste.
- [x] Waste profiling data (TCLP, WET and SW846, as applicable).
- [x] Filter change logs for all filtration units, water filtration units (as applicable) and respirators.
- [x] Foreman’s daily job reports.
- [x] Employee and visitor entry/exit logs for all containments.
- [x] Manometer printouts for all applicable containments.
- [x] Air sample results for all personnel, work areas and air filtration units.

1.3 SCHEDULE

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<tr>
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<td>7 concurrent asbestos and lead hazard/related work shifts</td>
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<td>Time frame:</td>
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1.4 CONTACTS:

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<th>Individual</th>
<th>Phone #</th>
<th>FAX #</th>
<th>E-Mail</th>
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<tbody>
<tr>
<td>SFUSD’s Project Manager:</td>
<td>Gioia Suplick</td>
<td>(415) 241-4309</td>
<td>(415) 355-6988</td>
<td><a href="mailto:SuplickG@sfusd.edu">SuplickG@sfusd.edu</a></td>
</tr>
<tr>
<td>SCA Environmental, Inc.’s Project Manager</td>
<td>Dan Leung, CIH, CSP, CAC #07-4175, CDPH #7329</td>
<td>(415) 867-9544</td>
<td>(415) 962-0736</td>
<td><a href="mailto:dleung@sca-enviro.com">dleung@sca-enviro.com</a></td>
</tr>
</tbody>
</table>

Note: Contact the District’s Project Manager only in an emergency.

1.5 SECURITY

Arrange site security with the District at the beginning of the job.

Provide temporary security at building penetrations created by the demolition and abatement.
1.6. SPECIAL CONDITIONS

**Design:**
1. Asbestos Abatement and Lead Hazard Abatement Project Designs shall be completed by the District’s designated Environmental Consultant only. Designers shall be EPA-accredited Asbestos Project Designers or California Department of Health Services’ Certified Lead Project Designers only.

**Air Sampling:**
1. **PCM Analysis:** Analysis of PCM samples shall follow the procedures outlined in NIOSH method 7400 and within these Contract Documents.

2. **TEM Analysis:** The U. S. Environmental Protection Agency passed regulations for schools under the Asbestos Hazard Emergency Response Act (AHERA), which are found in 40 CFR Part 763 "Asbestos Containing Materials in Schools". This regulation states that all abatement work shall be evaluated upon completion by collecting air samples using aggressive sampling techniques and that all such samples shall be analyzed using Transmission Electron Microscopy (TEM). The TEM protocol for large projects/zones calls for the collection of a minimum of five (5) inside samples, five (5) outside samples, and three (3) blank samples and each should be analyzed by TEM. The regulation strictly defines the criteria that must be met to determine that a building is acceptably clean after removal. TEM analysis turnaround times shall be 24 hours, unless otherwise indicated.

3. The sampling and analytical criteria in the AHERA regulation for schools shall be viewed as the preferred method for determining that any asbestos abatement project in any building has achieved a satisfactory level of cleanliness. The **District** shall clear all work areas using [aggressive] [static] sampling and TEM analysis, unless otherwise noted below. The District reserves the right to determine the quantity of reoccupancy air samples and blanks to be collected for each subzone.

4. The **District** shall pay the Environmental Consultant's costs of the final round of visual inspections, aggressive air sampling, and PCM and/or TEM analyses that will meet the asbestos abatement specification. All rounds of visual inspections, aggressive air sampling, and PCM and/or TEM analyses that fail to meet the contract criteria shall be borne by the Contractor. For the purpose of this paragraph, visual inspection includes the area isolation inspection, pre-encapsulation inspection, and final area clean-up inspection.

5. During all asbestos-related work, perimeter sample results will be collected by the **District** and/or their Environmental Consultant (Industrial Hygienist). These samples will be analyzed by Phase Contrast Microscopy (PCM). Sample results that are in excess of the background level or one hundredth fibers per cubic centimeter (>0.01 f/cc) Project Action Level may be forwarded for analysis by Transmission Electron Microscopy (TEM) with a twelve (12) hour turnaround specified. Handling, shipping, and analysis charges (including the Environmental Consultants time and expenses) will be paid for by the Contractor. Any sample results in excess of seventy asbestos structures per square millimeter (70 str/mm²) of filter area (corrected for a twelve hundred to eighteen hundred (1,200 - 1,800) liter sample volume as appropriate) will require cleaning, inspection, and resampling of the affected area at the Contractor's expense.

6. During all lead hazard-related work, such as demolition, torching and welding activities, etc., as applicable, perimeter air sample and/or lead wipe sample results will be collected by the District's Environmental Consultant (Industrial Hygienist). These samples will be analyzed by flame atomic absorption. Wipe sample results which are in excess of the
construction dust control standard of eight hundred micrograms per square foot (>800 µg/SF) for adjoining construction zones on two (2) consecutive samplings (or two (2) consecutive days) or forty 40 micrograms per square foot (>40 µg/SF) for adjoining occupied (floor) areas on any occasion will require isolation and clean-up of the affected areas. Air sampling results in excess of the Cal/OSHA "Project Action Level" of 1.5 micrograms per cubic meter will require isolation of the work area and amendment of work procedures and/or clean-up of the affected areas. Resampling of the affected areas and handling, shipping, and analysis charges (including the Environmental Consultant's time and expenses) for additional sampling required to show background levels below these construction lead standards shall be borne by the Contractor.

Submittals:
1. All pre-construction submittals shall be forwarded to the District’s Project Manager and the District’s designated Environmental Consultant (Industrial Hygienist) in the Contract Documents and herein.

2. Failure by the Contractor to fulfill the submittal requirements as specified in the Contract Documents and herein shall be the basis for withholding final payment until such submittal requirements are satisfied.

Additional Liquidated Damages:
1. The Contractor shall pay for all Environmental Consultant costs for delays in completion of work beyond the authorized schedule established by the District. Such charges shall include Consultant's observations and inspections, daily air monitoring, equipment, transportation and analysis charges. Such costs are estimated at $1,200 per day, exclusive of any costs associated with final clearance air testing. See the Liquidated Damages Section in the General Conditions for further requirements.

Waste Manifests:
1. The Contractor shall coordinate the inspection and signing of all waste manifests with the District and its Environmental Consultant, while on-site. Failure to complete the manifests or callbacks after completion of the project will be backcharged to the Contractor.

1.7 SUMMARY OF SAMPLING RESULTS:

Asbestos-containing materials identified include:

a. Pipe insulation on straight runs, elbows and tees [Sample I.D. PI-1].

b. Ceramic wall tiles, cove base and window sills with associated glue [Sample I.D. WLCER-2].

c. Gray/off-white interior and exterior window putty at North, South and East walls [Sample I.D. PUTTY-3].

d. Black interior and exterior caulking around windows at North, South and East walls [Sample I.D. CAULK-4].

e. Asphalt paving and associated coatings at all paved areas throughout campus [Sample I.D. ASPHALT-5].
Assumed asbestos-containing materials identified include:

f. Assumed fire-rated core in firedoors [Sample I.D. FIREDOOR-AAA1].

g. Black waterproofing tar/coating below concrete slabs and sub-grade perimeter walls [Sample I.D. VAPBAR-AAA2].

h. Transite underground sewer, water and drain piping [Sample I.D. PI-AAA3].

Non-asbestos materials identified, which may be impacted by the renovations include:

a. See Section 00 31 26.

Lead-based paints tested on-site, requiring protection from disturbances causing airborne lead dusts during the abatement phase includes the following:

a. Paint on metal handrails, guardrails and support brackets [Sample I.D. PAINT-1, with 1.0 mg/cm²].

b. Paint on metal door frames and transom frames [Sample I.D. PAINT-2, with 1.0 – 2.2 mg/cm²].

c. Paint on metal window sash, frames and panels at North, South and East walls [Sample I.D. PAINT-3, with 1.0 – 3.8 mg/cm²].

d. Paint on metal security screens on windows and louvered vents [Sample I.D. PAINT-4, with 1.0 mg/cm²].

e. Paint on fire sprinkler piping and supports [Sample I.D. PAINT-5, with 1.0 mg/cm²].

f. Paint on gas piping and supports [Sample I.D. PAINT-6, with 3.0 mg/cm²].

g. Paint on metal window sash, frames and sills at North, South and East walls [Sample I.D. PAINT-7, with 1.0 – 1.6 mg/cm²].

h. Paint on metal heater covers [Sample I.D. PAINT-8, with 1.0 mg/cm²].

Treat all similar paints and substrates in kind. Note that most building paints contain some lead content, and require demolition dust control procedures for compliance with Cal/OSHA's Construction Lead Standard under 8 CCR 1532.1.

Scrape and stabilize all loose and peeling paints on-site. Characterize debris from coated materials, battleship linoleums, and ceramic tiles for possible disposal as hazardous waste. Intact painted elements may be disposed as non-hazardous waste complying with dust controls and personal protective procedures per Cal/OSHA regulation 8 CCR 1532.1 and CDPH regulation 17 CCR Sections 35001 through 36100, if both the total and leachable lead contents of the waste streams are below 1000 mg/kg and 5 mg/liter (WET and TCLP tests).

PART 2 - PRODUCTS (MATERIALS AND EQUIPMENT)

NOT USED
PART 3 - EXECUTION

3.1 STANDARD PROCEDURES

### Asbestos Abatement:

<table>
<thead>
<tr>
<th>Material</th>
<th>Activity Class</th>
<th>Sample I.D.</th>
<th>% Asbestos</th>
<th>Est. Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic wall tile mastics</td>
<td>2</td>
<td>WLCER-2</td>
<td>1-5% CH</td>
<td>See Building Plans</td>
</tr>
<tr>
<td>Window putty and caulking</td>
<td>2</td>
<td>PUTTY-3 CAULK-4</td>
<td>1-5% CH</td>
<td>See Building Plans</td>
</tr>
<tr>
<td>Fire doors</td>
<td>2</td>
<td>FIREDOOR-AAA1</td>
<td>Assumed &gt;1%</td>
<td>See Building Plans</td>
</tr>
</tbody>
</table>

**Material Group A-3:** Misc. Interior Finishes (As Applicable)

- **Method:**
  - X Full Isolation or Mini-Containments
  - ___ Glovebag
  - ___ Glovebag-Cutout
Asbestos Abatement Procedures for Material Group A-3 (Applicable Indicated):

<table>
<thead>
<tr>
<th><strong>Decon System:</strong></th>
<th>Shower</th>
<th>Central</th>
<th>Hudson sprayer or bucket decon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Floor:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>Drop Cloths</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Scaffold</td>
</tr>
<tr>
<td><strong>Walls:</strong></td>
<td>1</td>
<td></td>
<td>Splash Guards</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Criticals:</strong></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other Comments:** For Glued-on Tiles over Trace or non-Asbestos Substrates: Remove wall tiles intact with the substrate and double bag for disposal as Category 1 non-friable waste. Where substrate removal is not required, remove the tiles and scrape the three-dimensional mastics using a razor blade or sharp knife.

**For Window Putty and Caulking:** Remove intact and double bag for disposal as non-friable asbestos waste.

**For Fire Doors:** Remove fire doors with 45-minute or greater fire rating intact, burrito-wrap in two (2) layers of six (6) mil fire-retardant polyethylene sheeting, and dispose as friable asbestos waste.

<table>
<thead>
<tr>
<th><strong>Abatement Material Group A-4:</strong></th>
<th>Thermal System Insulation (TSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method:</strong></td>
<td>X Full Isolation or Secondary Containment</td>
</tr>
<tr>
<td></td>
<td>X Glovebag</td>
</tr>
<tr>
<td></td>
<td>____ Glovebag-Cutout</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Material</strong></th>
<th><strong>Activity Class</strong></th>
<th><strong>Sample I.D.</strong></th>
<th><strong>% Asbestos</strong></th>
<th><strong>Est. Quantity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal system insulation (TSI)</td>
<td>1 or 3, as applicable depending on quantity abated</td>
<td>PI-3</td>
<td>5% AM</td>
<td>See Building Plans</td>
</tr>
</tbody>
</table>
Asbestos Abatement Procedures for Material Group A-4 (Applicable Indicated):

<table>
<thead>
<tr>
<th>Decon System:</th>
<th>X Shower if &gt;25 SF</th>
<th>Central</th>
<th>X Hudson sprayer or bucket decon if &lt;25 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor:</td>
<td>2 # Layers Poly</td>
<td>Drop Cloths</td>
<td>Scaffold</td>
</tr>
<tr>
<td>Walls:</td>
<td>1 # of Polyethylene Layers</td>
<td>Splash Guards</td>
<td></td>
</tr>
<tr>
<td>Criticals:</td>
<td>2 # of Polyethylene Layers</td>
<td>Plywood Barriers</td>
<td></td>
</tr>
</tbody>
</table>

**Other Comments:** Set-up secondary containment for all glovebag abatement areas, or set-up full isolation containment. Set-up glovebags and abate using wet methods. Double bag the waste and dispose as friable asbestos waste.

Areas with evidence of damaged TSI will require HEPA-vacuuming of the access to this debris as well as vacuuming of all piping, ductwork and substrate materials within a minimum five (5) ft. radius of all such contamination.

Removal of TSI shall be sufficient to accommodate access by applicable trades within the plenum, wall cavity or crawl space zone for routing of conduit, cables, etc. Coordinate with abatement of other applicable materials

---

### Abatement Material Group A-7:

<table>
<thead>
<tr>
<th>Material Activity</th>
<th>Material Activity</th>
<th>Sample I.D.</th>
<th>% Asbestos</th>
<th>Est. Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior asphalt</td>
<td>2 ASPHALT-5</td>
<td>2-5% CH</td>
<td>See Building Plans</td>
<td></td>
</tr>
<tr>
<td>Exterior door and window caulking</td>
<td>2 PUTTY-3</td>
<td>1-5% CH</td>
<td>See Building Plans</td>
<td></td>
</tr>
<tr>
<td>Exterior window glazing compounds</td>
<td>2 CAULK-4</td>
<td>2-5% CH</td>
<td>See Building Plans</td>
<td></td>
</tr>
<tr>
<td>Waterproofing tar/coating</td>
<td>2 VAPBAR-AAA2</td>
<td>Assumed &gt;1%</td>
<td>See Building Plans</td>
<td></td>
</tr>
</tbody>
</table>
Asbestos Abatement Procedures for Material Group A-7 (Applicable Indicated):

<table>
<thead>
<tr>
<th>Decon System:</th>
<th>Shower</th>
<th>Central</th>
<th>Hudson sprayer or bucket decon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor:</td>
<td># Layers Poly</td>
<td>Drop Cloths</td>
<td>Scaffold</td>
</tr>
<tr>
<td>Walls:</td>
<td># of Polyethylene Layers</td>
<td>Splash Guards</td>
<td></td>
</tr>
<tr>
<td>Criticals:</td>
<td># of Polyethylene Layers</td>
<td>Plywood Barriers</td>
<td></td>
</tr>
</tbody>
</table>

Other Comments: For asphalt: Cordon area and abate using wet methods. Seal vents, windows, etc. with one layer of six (6) mil polyethylene sheeting as a critical barrier. Load wastes into dumpsters and burrito all wastes. HEPA vacuum the surrounding area following the abatement for final reoccupancy testing. Dispose of all debris as non-friable waste.

For waterproofing tar/coating: Abate using wet methods and 8 CCR Class 2 work procedures. Seal vents, windows, etc. with one layer of six (6) mil polyethylene sheeting as a critical barrier. Double bag all wastes. HEPA vacuum the surrounding area following the abatement for final reoccupancy testing. Removal will be completed within a full isolation containment.

For Exterior Window and/or Door Caulking: Close and seal off all windows from the inside, and complete scraping of caulking as required for window and door removal. Install drop cloths inside and outside as required to contain caulking debris. HEPA vacuum sills and surrounding area and drop cloths before final visual reoccupancy inspection.

For Window Glazing Putty Removal: Remove the windows intact to avoid disturbance to the window glazing putties. Burrito-wrap and dispose of windows as Category 1 non-friable waste. Where full removal intact is not feasible, close and seal windows and scrape putties utilizing drop cloths and wet methods. HEPA vacuum sills and surrounding area and drop cloths before final visual reoccupancy inspection.

Coordinate with abatement of loose and peeling lead-based paints. All loose and abated materials must be locked within the waste dumpster daily before leaving the site. Allow for a twenty (20) ft. minimum buffer zone between the roof removal activities and other demolition or renovation work.

Make sure that drop cloths extend sufficiently, about ten (10) ft. minimum, in all directions.

3.2 LEAD HAZARD PROCEDURES

Lead Hazards Construction Work:

<table>
<thead>
<tr>
<th>Zone(s) L-1:</th>
<th>Paint Stabilization, Painted Substrate Demolition and Dust Clean-up</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sample I.D.</th>
<th>Color</th>
<th>Area</th>
<th>Lead Content</th>
<th>Activity Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUD-defined Lead-Based Paints or Glazing</td>
<td>Varies</td>
<td>See Section 00 31 26</td>
<td>( \geq 5,000 \text{ ppm or } \geq 0.5% \text{ or } \geq 1 \text{ mg/cm}^2 )</td>
<td>1</td>
</tr>
<tr>
<td>Majority of painted substrates</td>
<td>Varies</td>
<td>See Section 00 31 26</td>
<td>( &gt;600 \text{ ppm} )</td>
<td>1</td>
</tr>
</tbody>
</table>

Lead Hazard Procedures for Zone(s) #L-1 (Applicable Indicated):

<table>
<thead>
<tr>
<th>Decon System:</th>
<th>Shower</th>
<th>Central</th>
<th>Hudson sprayer or bucket</th>
</tr>
</thead>
</table>
**Required Methods:**

<table>
<thead>
<tr>
<th>Method</th>
<th>Full Containment</th>
<th>Manual Methods w/Drop Cloths</th>
<th>Loose &amp; Peeling Paints Stabilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Other Comments:**

*For Drilling through Lead-Containing Paints:* Post notices, including CDPH, Cal/OSHA and EPA RR&P notices, as applicable, prior to start of work. Manually scrape and stabilize loose and peeling paints prior to drilling using drop cloths, wet methods, and HEPA vacuums for dust control in compliance with Cal/OSHA regulation 8 CCR 1532.11 and the EPA’s RR&P rules. Avoid dry sweeping. Burning of paints, use of heat guns greater than 1,100 deg. F, and use of leaf blowers or compressed air for clean-up are prohibited. Use of mechanical equipment, such as sanders, grinders and needle guns without a HEPA-vacuum attached thereto are prohibited for sites with children under the age of 6 as occupants per EPA’s RR&P rules. Work areas shall be cleaned-up of lead hazards daily before leaving the site.

*For Disposal & Cleanup:* Demolish and dispose of intact painted substrates as non-hazardous waste. Characterize and dispose of loose and peeling paint debris, chemical strippers, rags, etc. as potential hazardous waste. Clean-up drop cloths and HEPA vacuum loose and peeling chips and debris daily for all work areas before leaving the site.

Complete abatement work exceeding the permissible exposure limit using CDPH Certified Lead Workers and Supervisors, including but not necessarily limited to demolition of lead glazed ceramic tiles, extensive manual or mechanical scraping or sanding of loose and peeling paints, demolition of concrete-encased primed steel, and spot abatement of primed structural steel prior to torching or cutting, as applicable.

<table>
<thead>
<tr>
<th>Zone(s) L-2:</th>
<th>Primed or Painted Structural Steel Spot Abatement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample I.D.</strong></td>
<td><strong>Color</strong></td>
</tr>
<tr>
<td>Primed structural steel with HUD-defined lead-based paints of various colors</td>
<td>Varies; see Lead Summary Tables</td>
</tr>
</tbody>
</table>
Lead Hazard Procedures for Zone(s) #L-2 (Applicable Indicated):

<table>
<thead>
<tr>
<th>Decon System:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X Hudson sprayer or bucket</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required Methods:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X Cordoned Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X Spot Abatement at Torching, Cutting &amp; Welding Locations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X Use of Local Exhaust Ventilation during Torching, Cutting &amp; Welding Phase</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Comments: For Spot Abatement: Post notices, including CDPH, Cal/OSHA and EPA RR&P notices, as applicable, prior to start of work. Manually scrape paints and primers at locations of new welded connections as shown on Structural Drawings. Use an approved chemical stripper with “low odor” and scrape using manual, wet methods, drop cloths, visqueen barriers, and HEPA vacuums for dust control in compliance with Cal/OSHA regulation 8 CCR 1532.1, CDPH regulation 17 CCR Section 35001 through 36100 and the EPA’s RR&P rules, as applicable. Avoid dry sweeping, burning of paints, use of heat guns greater than 1,100 deg. F, and use of leaf blowers or compressed air for clean-up. Use of mechanical equipment, such as sanders, grinders and needle guns without a HEPA-vacuum attached thereto are prohibited for this site per the EPA RR&P rules. Work areas shall be cleaned-up of lead hazards daily before leaving the site.

Note that 8 CCR 1537 (c) requires stripping of any painting coating for a distance of at least 4-inches from the area of heat application, or workers shall be required to use supplied air respirators in accordance with 8 CCR 1532.1 or the provisions of 8 CCR 1536 (b) (c). Dispose of stripper and contaminated drop cloths as hazardous waste.

Ventilate the abatement zone as required by the stripper manufacturer. Workers shall wear combination organic (charcoal) and HEPA filter respirator cartridges, as necessary.

Note that despite the quality of abatement, some minor residues may remain on structural elements as well as paints and primers on inaccessible surfaces, which cannot be abated. During the welding phase, the Contractor shall operate “smog hogs” or localized exhaust units in the vicinity of welding work to prevent build-up of airborne lead contaminants within occupied and other construction areas. Localized exhaust units shall exhaust outdoors.

Complete abatement work exceeding the permissible exposure limit using CDPH Certified Lead Workers and Supervisors, as applicable.

For Disposal & Cleanup: Demolish and dispose of intact painted substrates as non-hazardous waste. Characterize and dispose of loose and peeling paint debris, chemical strippers, rags, etc. as potential hazardous waste. Clean-up drop cloths and HEPA vacuum loose and peeling chips and debris daily for all work areas before leaving the site.

3.3 MONITORING AND REOCCUPANCY TESTING
### Asbestos Reoccupancy Testing Requirements
(includes budgeted # of samples):

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Method</th>
<th>PCM/zone</th>
<th>TEM/zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firedoor Abatement</td>
<td>X Visual Only</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>Wall Tile Mastic Removal</td>
<td>___ Visual Only</td>
<td>___</td>
<td>1-5 TEM/zone</td>
</tr>
<tr>
<td>TSI Abatement</td>
<td>___ Visual Only</td>
<td>___</td>
<td>1-5 TEM/zone</td>
</tr>
<tr>
<td>Exterior Asphalt Abatement</td>
<td>X Visual Only</td>
<td>___</td>
<td>___ TEM/zone</td>
</tr>
<tr>
<td>Window Replacements</td>
<td>X Visual Only</td>
<td>___</td>
<td>___ TEM/zone</td>
</tr>
<tr>
<td>Exterior Waterproofing Abatement</td>
<td>X Visual Only</td>
<td>___</td>
<td>___ TEM/subzone</td>
</tr>
</tbody>
</table>

### Lead Clearance Requirements
(includes budgeted # of samples):

<table>
<thead>
<tr>
<th>Zone Type</th>
<th>Method</th>
<th>Post Abatement</th>
<th>Post Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior and Exterior Zones</td>
<td>X Visual Only</td>
<td>___</td>
<td>___ Post-Construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>___ Wipe Testing</td>
<td>Wipe Testing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Floors</td>
<td>Window Sills</td>
</tr>
</tbody>
</table>

### ATTACHMENT

A. Table 1. Materials Matrix Report (attached table contains approximate quantities of asbestos, lead and PCB-containing items that may be impacted by the upcoming renovation activities).

---

**Consultant’s Signature:**
Dan Leung, CIH, CSP, CAC #07-4175, CDPH #7329  
**Date:** 2/12/19

---

**Contractor’s Signature**

**Date:**
### Table 1: Materials Matrix Report-Longfellow ES, 755 Morse St.,
SF, CA 94112

<table>
<thead>
<tr>
<th>Material ID</th>
<th>Material Description</th>
<th>Asbestos?</th>
<th>UNITS (LF, SF, EA)</th>
<th>Basement</th>
<th>First Floor</th>
<th>Second Floor</th>
<th>Exterior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A B C D E F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ASBESTOS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI-1 (b)</td>
<td>Pipe insulation on straight pipe runs, elbows and tees</td>
<td>Positive</td>
<td>LF 200 200 200 100 400 200 200 400 400 1400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WLCER-2 (b)</td>
<td>Ceramic wall tiles, core base and window sill w/associated glue</td>
<td>Negative</td>
<td>SF 600 600 600 600 600 600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUTTY-3 (b)</td>
<td>Gray/white interior/exterior window putty at North, South and East walls</td>
<td>Negative</td>
<td>LF 600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAULK-4 (b)</td>
<td>Black interior/exterior caulking around windows at North, South and East walls</td>
<td>Negative</td>
<td>SF 600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASPHALT-5 (b)</td>
<td>Asphalt paving and associated coatings at all paved areas throughout campus</td>
<td>Assumed</td>
<td>SF 2000 2000 2000 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **ASSUMED ASBESTOS (Destructive Testing Required to Confirm)** | | | | | | | |
| FIREDOOR-AAA1 (b) | Assumed fire-rated core in firedoors | Assumed | SF 900 | 500 | 900 | 1400 |          |
| VAPBAR-AAA2 | Black waterproofing tar/covering below concrete slabs and sub-grade perimeter walls | Assumed | SF 900 | 900 | 900 | 1900 |          |
| PI-AAA3 (b) | Transite underground sewer, water and drain piping | Assumed | LA 5 6 6 17 |          |             |              |          |

| **NON-ASBESTOS** | | | | | | | |
| WLP/CLPL-6 (b) | Skimcoat and basecoat plasters at walls, columns, trim and ceilings | Assumed | SF PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| CLEE-1 (b) | 12"x12" Glued-on wall and ceiling tiles | Assumed | SF PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| CLMR-2 (b) | Ceiling stucco above LCLm. | Assumed | SF PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| BOARD-9 (b) | Tackboards and associated glue | Assumed | SF PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| PL-10 (b) | Fiberglass pipe insulation | Assumed | LF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| FLCLR-11 (b) | Terra cotta floor and base cove tile, grout and mortar | Assumed | LF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| WLCER-12 (b) | Fiberglass w/resincoating acoustical wall panels in Multi-purpose room 113 | Assumed | SF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| PAINT-13 (b) | Paint and skimcoat on concrete walls, columns, retaining walls and stairs | Assumed | SF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| PUTTY-14 (b) | Black exterior window putty at windows at West walls | Assumed | LF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| CAULK-15 (b) | Black exterior caulking around windows at West walls | Assumed | LF PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |
| FLVC-1 (b) | Beige vinyl floor sheeting w/jute backing on concrete slab | Assumed | SF 900 900 900 1000 |          |             |              |          |
| CONC-2 | Brown/green painted concrete walls and columns | Assumed | SF 900 900 900 |          |             |              |          |
| SOIL-3 | Brown soil under concrete sidewalk (~12 inches deep) | Assumed | SF 900 900 900 |          |             |              |          |
| CONC-4 | Gray concrete sidewalk | Assumed | SF 900 900 900 |          |             |              |          |
| CONC-10 | Gray concrete walls and ceilings | Assumed | SF 900 900 900 |          |             |              |          |
| GASKET-11 | Black gasket between flanges of water supply pipe valves | Assumed | EA 2 2 2 |          |             |              |          |
| GASKET-12 | Green gasket between flanges of water supply pipe valves | Assumed | EA 1 1 1 |          |             |              |          |
| CAULK-13 | Black caulking around security screen of wall cavity | Assumed | SF 20 20 20 |          |             |              |          |
| CONC-14 | Gray concrete sidewalk | Assumed | SF 50 50 50 |          |             |              |          |
| CONC-15 | Gray concrete sidewalk | Assumed | SF 10 10 10 |          |             |              |          |
| CONC-16 | Gray concrete sidewalk | Assumed | SF 50 50 50 |          |             |              |          |

| **PCBs** | | | | | | | |
| PCBs | PCB-Ballasts (assumed >50 ppm) | Assumed, >50 | EA PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ PNQ |          |             |              |          |

SCA Project No. B-12831
Surveyed January 16 and February 6, 2019
<table>
<thead>
<tr>
<th>Material ID</th>
<th>Material Description</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Basement</th>
<th>First Floor</th>
<th>Second Floor</th>
<th>Exterior</th>
<th>TOTAL (+/-15%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAINT-1 (b)</td>
<td>Paint on metal handrails, guardrails and support brackets</td>
<td>1.0 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
</tr>
<tr>
<td>PAINT-2 (b)</td>
<td>Paint on metal door frames and transom frames</td>
<td>1.0 - 2.2 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
</tr>
<tr>
<td>PAINT-3 (b)</td>
<td>Paint on metal window sash, frames and panels at North, South and East walls</td>
<td>1.0 - 3.8 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
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</tr>
<tr>
<td>PAINT-4 (b)</td>
<td>Paint on metal security screens on windows and lowered vents</td>
<td>1.0 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-5 (b)</td>
<td>Paint on fire sprinkler piping and supports</td>
<td>1.0 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-6 (b)</td>
<td>Paint on gas piping and supports</td>
<td>3.0 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-7 (b)</td>
<td>Paint on metal window sash, frames and sills at North, South and East walls</td>
<td>1.0 - 1.6 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-8 (b)</td>
<td>Paint on metal heater covers</td>
<td>1.0 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-9 (b)</td>
<td>Paint on acoustical wall and ceiling tiles</td>
<td>&lt;0.1 - 0.2 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
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</tr>
<tr>
<td>PAINT-10 (b)</td>
<td>Paint on concrete walls, columns, ceilings, trim, stairs and floors</td>
<td>0.1 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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</tr>
<tr>
<td>PAINT-11 (b)</td>
<td>Paint on piping board walls and ceilings</td>
<td>&lt;0.1 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-12 (b)</td>
<td>Paint on plaster walls, columns, ceilings, soffits and trim</td>
<td>&lt;0.1 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-13 (b)</td>
<td>Paint on conduits</td>
<td>0.3 - 0.4 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-14 (b)</td>
<td>Paint on metal, wood and FRP doors</td>
<td>&lt;0.1 - 0.2 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>PAINT-15 (b)</td>
<td>Paint on metal door frames</td>
<td>&lt;0.1 - 0.4 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
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<td>PAINT-16 (b)</td>
<td>Paint on electrical panels</td>
<td>&lt;0.1 mg/cm²</td>
<td>SF</td>
<td>PNQ</td>
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<tr>
<td>PAINT-17 (b)</td>
<td>Paint on fire extinguisher cabinets</td>
<td>0.1 mg/cm²</td>
<td>SF</td>
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<tr>
<td>BE-4</td>
<td>Brown paint on concrete walls and metal vent/security screen</td>
<td>570 ppm</td>
<td>SF</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
<td>PNQ</td>
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<tr>
<td>BE-5</td>
<td>Beige paint on concrete walls</td>
<td>260 ppm</td>
<td>SF</td>
<td>PNQ</td>
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### LEAD

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<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>Basement</th>
<th>First Floor</th>
<th>Second Floor</th>
<th>Exterior</th>
<th>TOTAL (+/-15%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-4</td>
<td>Brown paint on concrete walls and metal vent/security screen</td>
<td>570 ppm</td>
<td>SF</td>
<td>PNQ</td>
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<td>SF</td>
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### Other Hazardous Materials

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<th>F</th>
<th>G</th>
<th>Basement</th>
<th>First Floor</th>
<th>Second Floor</th>
<th>Exterior</th>
<th>TOTAL (+/-15%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>Fluorescent Light Tube</td>
<td></td>
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</tbody>
</table>

**Notes:**
- PNQ = Present, not quantified; CH = Chrysotile; AM = Amosite; ND = Not detected; NA = Not analyzed
- a) Quantity listed is amount expected to be impacted, and not representative of the entire space/area.
- b) Information extracted from SES Hazmat Specifications dated February 4, 2015
SECTION 02 82 33
REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

TABLE OF CONTENTS

PART 1 – GENERAL.................................................................................................................................................. 1
1.1 SUMMARY................................................................................................................................................... 1
1.2 REFERENCES .............................................................................................................................................. 1
1.3 DEFINITIONS .............................................................................................................................................. 2
1.4 SUBMITTALS ............................................................................................................................................ 10
1.5 QUALITY ASSURANCE ........................................................................................................................... 11
1.6 TIME LIMITATION AND DELAY CHARGES ........................................................................................ 13

PART 2 – PRODUCTS ............................................................................................................................................. 13
2.1 ASBESTOS WORK - MATERIALS AND EQUIPMENT ......................................................................... 13

PART 3 – EXECUTION ........................................................................................................................................... 15
3.1 EXAMINATION......................................................................................................................................... 15
3.2 PREPARATION.......................................................................................................................................... 15
3.3 ASBESTOS ABATEMENT PROCEDURES (AS APPLICABLE). ............................................................ 17
3.4 WASTE DISPOSAL AND MANIFESTING .............................................................................................. 24
SECTION 02 82 33

HAZARDOUS MATERIALS ABATEMENT AND CONTROL

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: Minimum requirements for hazardous materials handling, control, and abatement activities, as applicable, including, but not necessarily limited to:

1. Hazardous materials controls.
2. Handling and disposal of asbestos-containing building materials (ACBM).
3. Demolition associated with access to hazardous materials.

B. Related Documents:
1. Document 00 31 26 - Existing Hazardous Material Information

C. Related Sections:
1. Section 02 26 00 – Asbestos and Lead Abatement Work Plan
2. Section 01 33 00 - Submittals.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
3. E849: Safety and Health Requirements Relating to Occupational Exposure to Asbestos.”

B. American National Standards Institute (ANSI):
2. Z41.1: “Men’s Safety Toe Footwear.”
4. Z87.1: “Practice for Occupational and Educational Eye and Face Protection.”
7. Z89.1: “Requirements for Industrial Head Protection.”

C. National Fire Protection Association (NFPA):

D. California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA):
   1. Title 8 California Code of Regulations (8 CCR) Section 5144 - Respiratory Protection.
   2. Title 8 California Code of Regulations (8 CCR) Section 1532.1 - Construction Lead Standard.
   3. Title 8 California Code of Regulations (8 CCR), Article 4, Section 1529 - Asbestos Standard for the Construction Industry.
   4. Title 8 California Code of Regulations (8 CCR) Sections 3203 and 1509 - Injury and Illness Prevention Program.
   5. Title 8 California Code of Regulations (8 CCR), Article 110, Section 5208 - Asbestos Standard for General Industry.
   6. Title 8 California Code of Regulations (8 CCR), Article 2.5, Section 341.6 for employer registration when disturbing more than one hundred square feet (100 SF) of ACCM.

E. U.S. Department of Housing and Urban Development (HUD): Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing,” referred to as the “HUD Guidelines.”

1.3 DEFINITIONS

A. Certain terms used in the Specifications are defined under this Section. These definitions are not necessarily complete or exclusive, but generally apply to the extent that they are not stated otherwise explicitly in other sections of this Specification. The following definitions apply throughout the Contract Documents

1. **Abatement** - Procedures for control of fiber release from asbestos-containing materials, including encapsulation, enclosure, controlled renovation procedures and removal.

2. **Abatement Contractor** - Contractor responsible for removal of all ACM and ACBM unless otherwise noted herein.

3. **ACBM** – AHERA/ASHARA term for Asbestos-Containing Building Material with more than 1% asbestos comprising an interior structural member in or on the building inclusive of covered walkways, porticos and exterior HVAC TSI.

4. **ACCM** – Asbestos-Containing Construction Material for manufactured construction material with greater than 0.1% asbestos.
5. **ACM** – Asbestos-Containing Material with more than 1% asbestos

6. **Accessible ACM** - materials that can be removed safely by the workers and re-insulated adequately by subsequent renovation activities.

7. **Aggressive Clearance** - work area clearance at the completion of abatement using aggressive sampling techniques, whereby air samples are collected while fans, leaf blowers, or air circulating devices are operated in a work area, and while floors, walls, and other structural surfaces are swept with brooms or a leaf blower to entrain any particles that may be present. Aggressive sampling will be utilized at the completion of interior abatement, unless otherwise noted.


9. **Airless Sprayer** - airless sprayer with the following minimum features: 120 volt, totally enclosed fan cooled electric motor equipped with a 3-wire cord; gun safety lock to prevent accidental spraying; single pump control knob to adjust priming and pressure from 500 to 2,500 psi at a constant volume; stainless steel or tungsten carbide paint valves; replaceable in-line filter and hose; self-cleaning adjustable spray tip; and 0.25 to 0.50 gpm delivery.

10. **Airlock** - a system for permitting ingress or egress without permitting air movement between any two adjacent areas consisting of two curtained doorways. The airlock must be maintained in uncontaminated condition at all times.

11. **Air Monitoring** - the process of measuring the fiber content of a specific volume of air in a stated period of time. Analysis of air samples shall be by phase contrast microscopy in accordance with the NIOSH 7400A or the OSHA Reference Method, or Transmission Electron Microscopy in accordance with 40 CFR Part 763 Asbestos-Containing Materials in Schools as published in the Federal Register, October 30, 1987, as applicable.

12. **Amended Water** - a water to which a surfactant has been added at a ratio according to the manufacturer's directions with a minimum surface tension of 29 dynes per square centimeter when tested in accordance with ASTM D 1331.

13. **Asbestos** - a generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos includes the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonitite-grunerite); anthropophyllite; tremolite; and actinolite. For the purposes of determining respiratory protection and worker protection, both the asbestiform and non-asbestiform varieties of the above materials and any of these materials that have been chemically treated or altered shall be considered asbestos.

14. **Asbestos Removal/Abatement Operations** - all herein specified procedures pertaining to the removing and disposing of all ACM at an EPA approved site, including encapsulation, repair, enclosure, encasement, controlled renovations, and operations and maintenance programs.

15. **Asbestos Work Area** - a work space within which all exposed surfaces, except those being removed, and fixed equipment have been sealed with intact layer(s) of polyethylene sheeting or equivalent. Work can be performed in this area that may result in the release of asbestos fibers into the work space only.

16. **Asbestos Work Class**: Activities for removing asbestos materials by categories are as follows:
a. **Work Class I**: Activity involving removal of TSI and surfacing asbestos-containing materials (ACM) or friable presumed asbestos-containing materials (PACM).

b. **Work Class II**: Activity involving removal of TSI and surfacing asbestos-containing materials (ACM) or friable presumed asbestos-containing materials (PACM).

c. **Work Class III**: Repair and maintenance operations where TSI or surfacing is likely to be disturbed, which fits within one standard glovebag or waste container under sixty (60) inches.

d. **Work Class IV**: Maintenance and custodial activities during which employees contact but do not disturb PACM or ACM and activities to clean-up dust, waste and debris resulting from Work Class I, II, and III activities.

17. **Barrier** - any surface that separates or seals off the work area to inhibit the movement of asbestos fibers, including:

   a. **Construction Barrier** - a partial barrier installed to restrict access to areas adjacent to the project area; may include barrier tape, where applicable.

   b. **Physical Barrier** - an airtight, solid barrier installed where the work area is adjacent to public areas.

   c. **Visual Barrier** - an opaque barrier constructed of polyethylene sheeting so that abatement operations are not visible to building occupants.

   d. **Visual Barrier** - an opaque barrier constructed of polyethylene sheeting so that abatement operations are not visible to building occupants.

   e. **Critical Barrier** - the physical point at which the pressure differential occurs, defined by a single or multiple barriers. Establish a critical barrier at every point where a distinct, independent air space exists adjacent to the work area, such as at doorways, windows, diffusers, etc. Critical barriers may be constructed of fire-retardant plywood, sheet metal, or sheetrock, as specified. Alternatively, a 6- or 10-mil layer of polyethylene sheeting may suffice, installed with reinforcing studs or furring strips. Critical barriers or other means of isolation are required for Class I Asbestos Work exceeding 25 LF or 10 SF.

   f. **Primary Barrier** - consists of two (2) layers of fire-retardant polyethylene sheeting installed to protect interior surfaces of the work area from damage or encapsulant and aid in the decontamination process. Surfaces covered by primary barriers shall be pre-cleaned and inspected by the Environmental Consultant in order for these barriers to remain during the clearance air sampling phase.

   g. **Secondary Barrier** - consists of a single layer of fire-retardant polyethylene sheeting installed on top of the primary barrier or building surfaces to catch gross debris and aid in the decontamination process.

18. **Certified Industrial Hygienist (CIH)** - an industrial hygienist certified by the American Board of Industrial Hygiene.

19. **CFM** - cubic feet per minute.
20. **Clean Equipment Room** - a room between the holding room and non-work area that is part of the equipment decontamination enclosure system. The clean equipment room comprises an airlock and **must** be maintained in an uncontaminated condition at all times.

21. **Clean Room (Change Room)** - an uncontaminated room that is part of the worker decontamination enclosures system, with storage space for workers' street clothes and protective equipment.

22. **Competent Person** - a person capable of identifying and eliminating asbestos hazards as defined per OSHA Regulation 29 CFR Part 1926.1101 and per DOSH Title 8 CCR Section 1529.

23. **Contaminated Area** - a work area where airborne concentrations of ACM exceed or can reasonably be expected to exceed the PEL, if disturbed.

24. **Contractor** - the individual or legal entity awarded the Contract for the asbestos abatement, including its employees, subcontractors, and subcontractors' employees.

25. **Curtained Doorway** - a device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. Typically constructed by placing two overlapping layers of polyethylene sheeting over an existing or temporarily framed doorway, securing each along the opposite vertical edge of the doorway. Space the two curtained doorways sufficiently apart to form an airlock, unless otherwise directed or approved due to space limitations. Weigh the curtains with a flexible/conforming material such as steel chain or PVC pipe.

26. **Decontamination Enclosure System** - a series of connected rooms with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system contains at least one airlock.

27. **Demolition** - the destruction or removal of any structural member or architectural treatment/surfaces of the facility together with any related handling operations.

28. **Disposal Bag** - 6-mil minimum thickness, leak proof plastic bag used for transporting asbestos waste from the work area to the disposal site, with the prescribed warning labels and identification markers.

29. **Encapsulant (Sealant)** - a liquid material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent release of fibers, including:
   a. **Bridging Encapsulant** - an encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.
   b. **Penetrating Encapsulant** - an encapsulant that is absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.

30. **Encapsulation** - all herein specified procedures necessary to coat asbestos-containing material or asbestos-contaminated surfaces with an encapsulant to control the possible release of asbestos fibers into the ambient air.

31. **Enclosure** - the construction of airtight walls, ceilings, and floors between the asbestos material and the facility environment, or around surfaces coated with asbestos materials, which prevents the release or disturbance of asbestos materials.

32. **Environmental Consultant** - technical representative of the District, consisting of Cal/OSHA Certified Asbestos Consultant(s) (CACs) and Certified Site Surveillance Technician(s) (CSSTs).
33. **EPA** - U.S. Environmental Protection Agency.

34. **Equipment Decontamination Enclosure System** - a decontamination system for materials and equipment consisting of a designated area of the work area for a washroom, holding room and clean equipment room.

35. **Equipment Room** - a room that is part of the worker decontamination enclosure system, with provisions for storage of potentially contaminated clothing or equipment. Keep the equipment room clear of suspect asbestos-containing debris at all times.

36. **Excursion Limit** - a level of airborne fibers specified by OSHA as an occupational exposure limit for asbestos set at 1.0 total fibers per cubic centimeter as measured over a 30-minute period.

37. **Fibers/cc** - fibers per cubic centimeter.

38. **Fireproofing** - spray or trowel-applied fire resistant material and any overspray thereof.

39. **Fixed Object** - any object which cannot be removed from the work area. This would include, but is not limited to, furniture, equipment, walls, doors, etc.

40. **Friable** - a material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry, and includes previously non-friable material that becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.

41. **Full Isolation (FI) Work Area** - designated rooms, spaces, or areas of the project that have been totally isolated for removal work by sealing, plasticizing, equipping with decontamination enclosure systems, and placing under negative pressure. Construct the full isolation work area (as a minimum) per OSHA Regulation 29 CFR Part 1926.1101 and DOSH Title 8 CCR, Section 1529.

42. **Glove Bag** - a manufactured or fabricated assembly consisting of a bag constructed of at least 6-mil transparent plastic, two inward-projecting long sleeve gloves, and may also contain an inward-projecting water wand sleeve, an internal tool pouch, and an attached, labeled receptacle or portion for asbestos waste. Most commonly used for the abatement of TSI.

43. **Glove Bag (GB) Work Area** - a method for removing ACM from heating, ventilating, and air conditioning (HVAC) ducts, piping runs, valves, joints, elbows, and other non-planar surfaces. The glove bag assembly is constructed and installed in such a manner that it surrounds the object or area to be contaminated and to contain all asbestos fibers released during the abatement process. Provide secondary containment for all glove bag work unless noted otherwise. Proper work procedures include smoke testing, no sliding or reuse, sealing adjacent materials (typically with a lagging compound), and a minimum of two abatement workers.

44. **Glove Bag Work Area With Cut-Out (GBCO)** - same as GB Work Area except that the pipe section or duct is removed with insulation in place. Two sections of the pipe are cleaned using GB technique after the pipe or duct and insulation are wrapped and sealed with polyethylene. Then pipe or duct is cut at both ends and disposed of intact as ACM.

45. **Ground Fault Interrupter (GFI)** - a device that automatically de-energizes any high voltage system component, which has developed a fault in the ground line.

46. **HEPA Filter** - a high efficiency particulate air (HEPA) filter which has a tested and documented efficiency for trapping and retaining a minimum of 99.97% of a 0.3 micrometer (aerodynamic...

47. **HEPA Vacuum Equipment** - vacuuming equipment with a (UL 586 label) HEPA filtration system capable of collecting and retaining asbestos fibers.

48. **Holding Room** - a room between the washroom and clean equipment room in the equipment decontamination enclosure system. The holding room comprises an airlock, and must be maintained in uncontaminated condition at all times.

49. **HVAC System** - heating, ventilating and air-conditioning systems consisting of pipes, ducts, and equipment (air-conditioners, chillers, boilers, heaters, pumps, fans, controls, etc.) used to heat, cool, move and/or filter air in a building; also known as mechanical systems.

50. **Make-up Air** - supplied or re-circulated air to offset that that has been exhausted from an area.

51. **Medical Surveillance** - a periodic comprehensive review of a worker's health status. The required elements of an acceptable medical surveillance program are listed in the Occupational Safety and Health Administration standards for asbestos.

52. **Miscellaneous ACM** - asbestos-containing building material on interior structural components, structural members, or fixtures, such as floor and ceiling tiles; does not include surfacing material or thermal system insulation.

53. **Movable Object** - a unit of equipment or furniture in the work area, which can be removed from the work area.

54. **MSHA** - Mine Safety and Health Administration.

55. **Negative Air Pressure Equipment** - a local exhaust system capable of maintaining a constant low velocity air flow into the decontamination enclosure system and work area from adjacent unsealed areas. A differential pressure must be maintained at any point in the work area no less than -0.025 inches water gauge relative to the pressure at any point outside the work area at all times, unless otherwise noted or approved.

56. **Negative Pressure Enclosure (NPE) System** - approved work practice including smoke testing each shift, manometer testing to prove a minimum 0.02 inches w.g. pressure differential, a minimum of 4 air changes per hour, electrical circuits off unless GFI circuits, and air movement away from the workers towards the HEPA unit.


59. **OSHA** - Occupational Safety and Health Administration.

60. **Perimeter Action Level** - the 8-hour time weighted average (TWA) airborne concentration of total fibers to which an occupant, employee, building maintenance and operations employee, contract tradesman, or other building occupant may be exposed. The perimeter action level shall be 0.01 fibers per cubic centimeter for the Clean Room and Equipment Decontamination Assembly areas; and 0.005
fibers per cubic centimeter for the Elevator Lobby and Electrical Room areas, and other occupied areas. These concentrations shall be measured as total fibers greater than 5 micrometers in length per cubic centimeter of air within 95% confidence limits as determined by phase contrast microscopy (PCM) in accordance with the OSHA Reference Method.

61. **Permissible Exposure Level (PEL)** - a level of airborne fibers specified by OSHA as an occupational exposure standard for asbestos, which represents the 8-hour time-weighted average of 0.1 total fibers per cubic centimeter as measured by phase contrast microscopy.

62. **Personal Air Monitoring** - a method used to determine an individual's exposure to airborne fibers. The sample is collected outside the respirator in the person's breathing zone.

63. **Phase Contrast Microscopy (PCM)** - a method of analysis for air samples for fibers using a light microscope. PCM analyses are unable to distinguish asbestos fibers from non-asbestos fibers, such as fiberglass, cellulose, household dust, gypsum, etc.

64. **Polarized Light Microscopy (PLM)** - an optical microscopic technique used to distinguish between different types of asbestos fibers by unique optical properties.

65. **Powered Air Purifying Respirator (PAPR)** - either a full facepiece, helmet, or hooded respirator that has the breathing air powered to the wearer after it has been purified through a filter.

66. **Pre-Cleaning** - the process of cleaning (decontaminating) all objects, ceilings, wall and floors of a proposed work area using wet cleaning methods, HEPA vacuuming equipment, etc., before abatement work commences.

67. **Presumed Asbestos-Containing Material (PACM)** - TSI or surfacing (sprayed or troweled-on surfaces, not including mastics) material found in buildings constructed no later than 1980 considered to be ACM unless disproved by 3 random negative PLM samples of the homogeneous material. While not PACM, asphalt and vinyl flooring materials installed no later than 1980 are considered ACM unless proven by negative PLM samples otherwise.

68. **Protection Factor (PF)** - the ratio of the airborne fiber concentration outside the respirator relative to the airborne fiber concentration within the respirator facepiece.

69. **Quality Control Representative (QCR)** - the Contractor's representative who is responsible for:
   a. evaluating the work quality to insure that the area meets the criteria for acceptability prior to requesting an inspection, and
   b. notifying the Environmental Consultant in writing for all requests for inspections.

70. **Qualitative Fit Test** - a method of testing a respirator's face-to-facepiece seal by covering the inhalation or exhalation valves and either breathing in or out to determine the presence of any leak.

71. **Removal** - procedures necessary to strip all ACM from the designated areas and to dispose of these materials at an acceptable site.

72. **Renovation** - modification of any existing structure or portion thereof where exposure to airborne asbestos may result.
73. **SDS** - Safety Data Sheets, which are available from the vendor or supplier for all materials used on the project. SDS must be available at the site in accordance with the OSHA Hazard Communications Standard (29 CFR Part 1910.1299).

74. **Self-Contained Breathing Apparatus (SCBA)** - supplied air respirators in which a tank worn on one's back contains the air.

75. **Shower Room** - a room between the clean room and the equipment room in the worker decontamination enclosure system equipped with a shower. The shower will allow for complete showering during decontamination. Provide the shower with 60 minutes of continuous, warm running water at a temperature of 110 to 120°F, as well as providing liquid soap, and shampoo.

76. **Staging Area** - either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

77. **Static (Passive) Air Sampling** - air monitoring without the use of fans or air circulating devices.

78. **Surfacing ACM** - asbestos-containing material that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

79. **Surfactant** - a chemical wetting agent added to water to decrease surface tension and thus increase water's ability to wet or penetrate bulk materials.

80. **Time Weighted Average (TWA)** - the average concentration of an contaminant weighted according to the duration for each time period of measurement.

81. **TLV** - threshold limit value; levels of contaminants established by the ACGIH to which it is believed that most of the workers can be exposed with minimal adverse health effects.


83. **TSI** - thermal system insulation; asbestos-containing material applied to fittings, pipes, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.

84. **TWA** - time weighted average.

85. **Type C Supplied Air Respirator** - a respirator designed to provide a very high level of protection, which supplies air to the wearer from an outside source, such as a compressor.

86. **Visible Emissions** - any emissions containing particulate asbestos material that are visually detectable without the aid of instruments, not including condensed water vapor.

87. **Visual Inspection** - a visual inspection by the Environmental Consultant of the work area under adequate lighting to ensure that the work area is free of visible asbestos material, debris, and dust.

88. **Washroom** - a room between the work area and holding area in the equipment decontamination enclosure system. The washroom comprises an airlock.
89. **Wet Cleaning** - the process of eliminating asbestos contamination from building surfaces and objects using cloths, mops, or other cleaning tools, which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.

90. **Wetting Agents** - materials that are added to water which are used for wetting the asbestos-containing material in order for the water to penetrate more effectively.

91. **Work Area** - designated rooms, spaces, zones, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area is one that has been sealed, plasticized, and equipped with a decontamination enclosure system and is regulated per 29 CFR Part 1926.1101 and DOSH Title 8 CCR Section 1529. A non-contained work area is an isolated or controlled-access work area which has not been plasticized nor equipped with a decontamination enclosure system.

92. **Work Area Alert Level** - 0.2 fibers/cc as measured by PCM inside the work area, either on an area or personal sample. Generally, levels higher than 0.2 fibers/cc will be viewed as a result of poor work practices.

93. **Worker Decontamination Enclosure System** - a decontamination system for workers consisting of a clean room, a shower room, and an equipment room.

94. **Zone** - see Work Area.

1.4 **SUBMITTALS**

A. **Asbestos:**

1. Submit the following, in accordance with Section 01 33 00 - Submittals, prior to Commencement of the Abatement Work:

   a. Proof of current Asbestos Contractor's license (C-22) issued by the Contractors State License Board (CSLB) per California Business and Professions Code, Section 7058.5 et al for Contractor(s) disturbing greater than or equal to 100 square feet of ACCM (>0.1% asbestos) at any time on one site.

   b. Worker documentation, including:

      1). Current AHERA training certifications - supervisor/competent persons or annual 8-hr. refresher training certificate for work involving coring through friable asbestos substrates.

      2). Current AHERA training certifications – workers or annual 8-hr. refresher training certificate for work involving coring through friable asbestos substrates.

      3). Respiratory fit test records within the past 12 months minimum, or in compliance with 8 CCR 5144.

      4). Medical examination approvals for respirator use within the past 12 months, or in compliance with 8 CCR 5144.

   c. Safety Data Sheets (SDS) for chemicals used.

   d. Emergency phone number and pager listing.
e. Rotameter calibration data within past six (6) months, where applicable (see Section 02 26 00 Asbestos and Lead Abatement Work Plan).

f. Negative Exposure Assessment, as warranted, where personal protective equipment differs from minimal requirements established by Cal/OSHA’s Construction Industry Standards.

2. Submit the following, in accordance with Section 01 33 00 - Submittals, within ten (10) calendar days of the request by the District or within ten (10) calendar days of completion of the abatement or hazard control work.
   a. Contractor daily personal air-monitoring data.
   b. Updated worker documentation, as needed.
   c. Daily boundary access logs.
   d. Copies of updated schedules and notices to regulatory agencies, as needed.
   e. Receipt and weight tickets from landfill operator or incinerator, as applicable.
   f. Copies of completed uniform waste manifests.
   g. Certification of Completion.
   h. List of quantity and location or remaining ACM within the Abatement Work Area per 8 CCR 1529 §k3c.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Asbestos Abatement Work: Only qualified persons shall engage in asbestos abatement activities. Work involving asbestos-containing materials exceeding 100 square feet (SF) or 100 linear feet (LF) shall be completed by a Contractor holding a valid asbestos handling license issued by the California State Contractors Licensing Board (SCLB) and a valid current Certificate of Registration for Asbestos-Related Work as issued by the California Department of Industrial Relations - Division of Occupational Safety and Health (Cal/OSHA). Work shall be completed under the on-site supervision of a Competent Person as defined by OSHA Regulation 29 CFR Part 1926.1101 (8 CCR 1529 in California). All abatement workers shall have AHERA training with annual 8-hour refresher training, current medical exams for the use of respiratory protection, and current fit test of appropriate respirators.

B. Regulatory Requirements: The Contractor shall be alerted to and familiar with the following laws and regulations regarding the hazards, control measures, management, characterizing, transport and disposal of hazardous wastes:

1. Asbestos Abatement Work: All labor, materials, facilities, equipment, services, employees and training, and testing necessary to perform the work required for asbestos abatement and disposal of waste shall be in accordance with these Specifications and the most current regulations, including but not limited to:

   a. Environmental Protection Agency NESHAP and AHERA regulations (40 CFR Part 763, as applicable).
b. Occupational Safety and Health Administration (inclusive of OSHA 29 CFR 1926.1101)

c. California Department of Occupational Safety and Health (inclusive of Cal/OSHA 8 CCR 1529 and Injury and Illness Prevention Program regulation 8 CCR 3203)

d. California Environmental Protection Agency (Cal/EPA).

e. Bay Area Air Quality Management District (BAAQMD), Regulation 11, Rule 2.

f. Other applicable federal, state, and local governmental regulations pertaining to asbestos-containing materials (ACM) and asbestos waste.

C. Meetings:

1. Pre-Construction or Pre-Abatement Meeting:

   a. Prior to any abatement work, the Contractor is to attend a pre-construction meeting to be attended by representatives of the District, the District’s Consultants, the Contractor, the Hazardous Materials Abatement Subcontractor, and other Subcontractors whose work may be affected. The meeting agenda shall include the following considerations:

      1). Review of the Specifications and Plans in detail related to the abatement and hazards work. All conflicts and ambiguities, if any, shall be discussed.

      2). Review the project conditions, schedule, construction sequencing, abatement application requirements, and quality of completed work.

      3). Review in detail the means of protecting adjoining areas, protect of Contractor’s, Subcontractor’s, District’s workers, and completed work during the abatement activities.

      4). Pre-job submittals requirements.

      5). Site security requirements.

2. Weekly Meetings: At the District’s option, abatement projects extending over one week in length may require attendance of the Contractor at a weekly progress meeting. The purpose of this meeting is to review abatement and project scheduling, coordination with other trades, security and site-specific requirements.
1.6 TIME LIMITATION AND DELAY CHARGES

A. Complete all asbestos, lead, and other hazard work specified in this Section in no more than the allotted calendar days or work shifts as outlined in the Abatement Work Plan or as otherwise specified in the Contract Documents.

1. In the event of failure to complete the Work of this Section within the specified time, the Contractor shall pay liquidated damages in the amount of twelve hundred dollar ($1,200.00) per calendar day for each day of delay in completion of work beyond the number of days specified in Paragraph 1.6A or Section 02 26 00 – Asbestos and Lead Abatement Work Plan. The specified amount of liquidated damages represents the District’s estimate of costs which include, but are not limited to, those of the District and the District’s Consultants for observations and inspections, daily air monitoring, equipment, transportation, and analysis charges which would be incurred by the District after the number of calendar days specified for completion of the Work of this Section.

PART 2 – PRODUCTS

2.1 ASBESTOS WORK - MATERIALS AND EQUIPMENT

A. Protective Devices:

1. Temporary wash stations or showers, disposable clothing, respirators, gloves, hard hats, and other required items.

2. Respirators shall protect against asbestos and other appropriate dusts, fumes and mists as approved by:
   a. the Mine Safety and Health Administration (MSHA).
   b. the National Institute for Occupational Safety and Health (NIOSH) under provisions of 30 CFR Part 11.

B. Waste Receptacles: Conform to federal and State regulations, with 6-mil minimum thickness or glovebags or waste bags.

C. Sealants and Polyethylene Sheeting:

1. Polyethylene sheeting shall be flame-retardant and approved and listed by the State Fire Marshal in accordance with Section 13121 and/or 13144.1 of the California Health and Safety Code.
   a. Thickness and Size: six (6) mil thick minimum, unless otherwise specified, sized to minimize the frequency of joints.
   b. Flammability: Comply with NFPA Standard 701 with a flame spread rating of no greater than five (<5) and a smoke development rating of no more than seventy (<70) when tested in accordance with ASTM E84 procedures.

2. Sealing Tape shall conform to the following:
   a. 2-inches or wider, capable of sealing joints of adjacent sheets of polyethylene and attaching polyethylene sheet to finished or unfinished surfaces or similar materials.
   b. Tape shall be capable of adhering under dry and wet conditions, including use of amended water.
3. Preservation Sealing Tape: Type specifically designed for adhering to critical or sensitive surfaces without damage to surface; 3M or equal.

4. Spray adhesives shall not contain methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

5. Fire resistant sealants shall be compatible with concrete, metals, wood, cable jacketing and other materials capable of preventing fire, smoke, water and toxic fumes from penetrating through sealants.
   a. Sealants shall be asbestos free and shall have a flame spread, smoke and fuel contribution of zero.
   b. Sealants shall be ASTM and UL-rated for three (3) hours for standard method of fire test for firestop systems.

6. Lagging sealer for enclosing and sealing raw exposed edges of piping, fitting, equipment and duct insulation (as applicable) shall meet the requirements of NFPA 90A.

D. Surfactants and Encapsulants:

1. Wetting agents or surfactants shall be effective and compatible with the ACM and ACBM being wetted.

2. Bridging or penetrating type encapsulants shall have the following characteristics:
   a. Water based. Do not utilize an organic solvent in which the solid parts of the encapsulant are suspended.
   b. Non-flammable with no methylene chloride.
   c. U.L. listed encapsulants, in full-scale ASTM E119 fire test, compatible with W.R. Grace "Retroguard, RG-1" fireproofing with "Spatterkote" Type SKII bonding treatment for structural and decking widths exceeding twenty four (24) inches.
   d. Compatible with replacement materials, especially mastics, fireproofing, and adhesives.

E. Mastic Removers shall conform to the following:

1. Non-flammable solvent or gel, with a flash point above one hundred and forty degrees Fahrenheit (>140 deg. F.).

2. Solvent waste shall not result in the generation of hazardous waste as described under 22 CCR, Division 4.

3. Removers shall not contain methylene chloride, halogenated hydrocarbons, or any of the following glycol ethers:
Common Name | Abbrev. | CAS#  | Chemical Name
--- | --- | --- | ---
ethylene glycol methyl ether | EGME | 109-86-4 | 2-methoxyethanol
ethylene glycol methyl ether acetate | EGMEA | 110-49-6 | 2-methoxyethyl acetate
ethylene glycol ethyl ether | EGEE | 110-80-5 | 2-ethoxyethanol
ethylene glycol ethyl ether acetate | EGEEA | 111-15-9 | 2-ethoxyethyl acetate
ethylene glycol dimethyl ether | EGDM | 110-71-4 | 1,2-dimethoxyethane
ethylene glycol diethyl ether | EGDE | 629-14-1 | 1,2-diethoxyethane
diethylene glycol | DEG | 111-46-6 | 2,2'-dihydroxyethyl ether
diethylene glycol methyl ether | DEGME | 111-77-3 | 2-(2-methoxyethoxy) ethanol
diethylene glycol ethyl ether | DEGEE | 111-90-0 | 2-(2-ethoxyethoxy) ethanol
diethylene glycol dimethyl ether | DEGDME | 111-90-6 | bis(2-methoxyethoxy) ether
triethylene glycol dimethyl ether | TEGDME | 112-49-2 | 2,5,8,11-tetraoxadodecane
dipropylene glycol | DPG | 110-98-5 | 2,2-dihydroxyisopropyl ether

F. Vacuums and Negative Pressure Units (NPUs) used for clean-up of materials and detail shall be HEPA-filtered. Provide DOP testing on-site for all units, unless otherwise noted in the Contract Documents.

2.2 OTHER HAZARDOUS MATERIALS - MATERIAL AND EQUIPMENT

A. Waste Containers:

1. Provide sealable metal drums, 55-gallon capacity, with sealable lids. Label the drums in accordance with EPA and DTSC requirements, including the Generator I.D. or location identification and manifest number. Drums shall be air and water tight.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Review the hazardous material report(s) to familiarize oneself with hazardous material locations and conditions, and previous abatement by others, as applicable.

B. Review site conditions to verify quantities, work zones, available utilities, security, etc.

3.2 PREPARATION

A. Minimum Protective Procedures for Asbestos Work:

1. Protection of Visitors and Other Site Personnel: Cordon off the abatement area(s) with appropriate signs, and provide temporary tunneling or scaffolding, as applicable.

   a. Effective June 1, 2016 warning signs shall include the following information: “Danger, Asbestos, May Cause Cancer, Causes Damage to Lungs, Authorized Personnel Only.”

   b. In addition where the use of respirators and protective clothing are required within regulated areas, the warning sign should include the following: “Wear Respiratory Protection and Protective Clothing in this Area.”

3. Provide site security to assure that no member of the public is able to gain access to the asbestos work area at any time. Maintain access and egress routes at all times.

4. Provide worker training, respiratory protection, and medical examinations to meet applicable regulations.

5. Provide temporary lighting and power to work areas, including installation of ground fault interrupters.

6. Fully ground all equipment within the work zone and decontamination assemblies.

7. Establish negative pressure in work area(s) as required under 8 CCR Section 1529. Note that where approved by the District, negative pressure units may be removed overnight from unoccupied building where site security and equipment are at risk. Under such conditions, the Contractor shall be responsible for sealing all openings and the decontamination assembly before completion of the day’s work and reestablishing negative pressurization of the zone before abatement commences.

8. Construct enclosure system(s) for worker and equipment decontamination.

9. Provide workers with sufficient sets of protective full-body clothing to be worn in the designated work area and whenever a potential exposure to airborne asbestos or potential safety hazards exists. Such clothing shall include but not be limited to: full-body coveralls, headgear, eye protection, and gloves. Disposable-type protective clothing, headgear, and footwear may be provided.

   a. Full-Body Clothing: Assure that workers wear hoods covering their hair in the designated work areas at all times. Do not wear protective clothing in lieu of street clothing outside the work area. Leave non-disposable-type protective clothing and footwear in the wash room until the end of the asbestos abatement work. An acceptable alternative to disposal is proper storage in a sealed and labeled container so that containers would be opened and clothing reused only in an asbestos work area.

   b. Eye protection: Provide eye protection to be worn as required by applicable safety regulations. Wear eye protection at all times within the asbestos work areas during all phases of work: preparation, removal, clean-up, encapsulation, waste handling, and similar operations. When appropriate, based on regulatory mandates, a full facepiece respirator may be worn to satisfy this requirement. Equipment shall conform to ANSI Z87.1. Use of contact lenses with respiratory protection is prohibited.

   c. Head Protection: Provide hard hats or other head protection as required by applicable safety regulations, conforming to ANSI Z89.1, Class A or B.

   d. Foot Protection: Provide nonskid footwear to all abatement workers, conforming to ANSI Z41.1, Class 75.

B. Site Protective Controls:

1. Protect against unnecessary disturbances or damages to sensitive finishes or furnishings that will remain within the facility.

2. Locate temporary scaffolding and containment barriers, as required, and proceed with the construction or demolition, allowing for continued operation of any adjacent occupied areas, as applicable.

3. Protect existing furnishings and building finishes from water, lead dusts, or chemical strippers.
4. Erect temporary protective covers over pedestrian walkways and at points of passage for persons or vehicles that are to remain operational during the lead hazard work.

5. Exterior lead hazard operations shall utilize mini-containments, drop cloths, wet methods, and HEPA vacuums as outlined in Cal/OSHA regulation 8 CCR Section 1532.1 and the HUD Guidelines, Chapter 8.

6. The District may evaluate the lead dust concentrations outside the work area on adjoining finishes during the work progress by collecting wipe samples to evaluate the integrity of the containment and to detect dust contamination.

7. Evaluation will review possible contamination resulting from:
   a. Failure to adequately cordon off or contain work area dusts, clean-up debris, and use approved work practices, such as wet wiping and HEPA vacuuming.
   b. Failure or breaches in the work area isolation containment.
   c. Failure or rupture in the negative pressurization/HEPA filtration system.
   d. Incomplete decontamination of personnel or equipment removed from the work area(s).

8. Perimeter wipe samples may be collected adjacent to each work area and compared to the pre-construction background concentrations. The District will analyze the wipe sample by flame atomic absorption per NIST Standard 1578.

9. The Contractor shall reclean adjoining occupied areas with surface concentrations exceeding background level or eight hundred micrograms per square foot (>800 µg/SF) during the construction activities. The Contractor shall bear the costs (including engineering, administrative, housekeeping, analytical and the labor and materials costs of the District’s consultant(s)) to return surface lead concentrations in elevated areas to acceptable levels.

3.3 ASBESTOS ABATEMENT PROCEDURES (AS APPLICABLE)

A. Notifications:
   1. Notify, in writing, the BAAQMD ten (10) working days prior to commencement of any non-emergency asbestos project involving more than one hundred linear feet (>100 LF) or more than one hundred square feet (>100 SF) of asbestos materials.

   2. Notify Cal/OSHA twenty four (24) hours in advance of any disturbances of any amount of friable or non-friable asbestos-containing materials or prior to performing asbestos-related work.

B. Interior Procedures (typical):

   1. Thermal System Insulation (TSI):
      a. Remove TSI as indicated on the Contract Drawings using full isolation or glovebag procedures per Cal/OSHA Regulation 8 CCR 1529, Work Class I, minimum.

      b. Glovebag cut-out procedures may be used for services scheduled for demolition, as applicable.
c. Use wet methods and HEPA vacuums, setting up critical barriers for quantities greater than 25 LF

d. Seal HVAC systems and install drop cloths below and over nearby objects.

e. Ventilate away from the workers, using a HEPA filtration system.

f. Provide a full decontamination system with shower for abatement quantities exceeding twenty five linear feet (＞25 LF) or as otherwise directed by the Contract Documents.

g. HEPA vacuum the entire contained area prior to clearance air testing.

h. Glovebag abatement work, where applicable, requires two workers minimum and smoke testing of all bags prior to abatement.

i. Dispose of TSI in double goosenecked labeled bags or double wrap cut-out sections in 6-mil polyethylene sheeting and properly labeled as friable asbestos waste.

2. Asbestos Plasters and Sprayed-on Surfacing Materials:

a. Remove ACM as indicated on the Contract Drawings using full isolation or mini-containment procedures per Cal/OSHA Regulation 8 CCR 1529, Work Class I, minimum.

b. Use wet methods and HEPA vacuums.

c. Set-up critical barriers for quantities greater than twenty five square feet (＞25 SF).

d. Seal HVAC systems and install drop cloths below and over nearby objects. Ventilate away from the workers, using a HEPA filtration system.

e. Provide a full decontamination system with shower for abatement quantities exceeding 25 LF or as otherwise directed by the Contract Documents.

f. HEPA vacuum the entire contained area prior to clearance air testing.

g. Dispose of ACM in double goosenecked bags properly labeled as friable asbestos waste.

3. Vinyl Floor Tiles and Mastics:

a. Remove the flooring and mastics as indicated on the Contract Drawings using full isolation procedures, satisfying the requirements of Cal/OSHA Regulation 8 CCR 1529, Work Class II.

b. Set-up critical barriers and splash guards and establish negative pressurization.

c. Remove the tiles using spud hoes and wet methods to minimize breakage and airborne fiber releases.

d. Remove the mastic using an approved ‘low odor’ mastic remover.

e. HEPA vacuum the contained area following abatement for clearance; minimize use of encapsulant on substrates to be retiled.
f. Provide a bucket decontamination system unless otherwise indicated in 02 26 00 Asbestos and Lead Abatement Work Plan.

g. Dispose of tiles as Category 1 non-friable waste. Dispose of mastics generally as hazardous waste per the mastic removal manufacturer’s recommendations.

h. For removal of mastics utilizing mechanical buffers, submit 10 working days advance notice to BAAQMD, utilize full isolation procedures including a shower decontamination assembly, and dispose of mastics as friable asbestos waste.

4. Vinyl Sheet Flooring and Mastics:

   a. Remove the flooring and mastics as indicated on the Contract Drawings using full isolation procedures, satisfying the requirements of Cal/OSHA Regulation 8 CCR 1529, Work Class II.

   b. Set-up critical barriers and splash guards and establish negative pressurization.

   c. Remove the sheeting using wet methods to minimize airborne fiber releases.

   d. Remove the mastic using an approved ‘low odor’ mastic remover.

   e. HEPA vacuum the contained area following abatement for clearance; minimize use of encapsulant on substrates to be retiled.

   f. Provide a full decontamination system with shower for areas exceeding twenty five square feet (>25 SF).

   g. Dispose of sheeting as friable asbestos waste. Dispose of mastics generally as hazardous waste per the mastic removal manufacturer’s recommendations.

   h. For removal of mastics utilizing mechanical buffers, submit 10 working days advance notice to BAAQMD, utilize full isolation procedures including a shower decontamination assembly, and dispose of mastics as friable asbestos waste.

5. Caulking:

   a. Remove the caulking as indicated by the Contract Drawings by cordoning the work area, setting up drop cloths and abating using wet methods and HEPA vacuums per 8 CCR 1529 Work Class 2 procedures.

   b. Cordon off the work area, installing critical barriers at the windows, doors, and other penetrations, as applicable.

   c. Set-up drop cloths on the floor and nearby furnishings to contain falling materials on the ground or public access areas surrounding the work area.

   d. HEPA vacuum the sills and frames following abatement.

   e. Provide a bucket decontamination system, typical.

   f. Dispose of caulking as Category 1 non-friable waste.
6. ‘Trace’ Asbestos Materials (Except Sheetrock Wallboard and Joint Compounds with Skimcoat):
   a. Remove composite materials as indicated on the Contract Drawings using full isolation or mini-containment procedures within occupied building per Cal/OSHA Regulation 8 CCR 1529, Work Class II.
   b. Use wet methods and HEPA vacuums, setting up critical barriers for occupied areas.
   c. Set-up critical barriers for occupied areas.
   d. For building demolition projects, cordon off the area and use dust control methods to minimize airborne fiber releases.
   e. HEPA vacuum the entire contained area prior to clearances for renovation projects.
   f. Dispose of composite materials as “trace” (less than one percent (<1%)) asbestos waste, unless otherwise cross-contaminated with other asbestos or hazardous wastes.

7. Contaminated Non-Asbestos Materials:
   a. Remove contaminated non-ACM substrates or underlying ceiling tiles, etc.
   b. Use wet methods and HEPA-filtered vacuums to decontaminate, where feasible. Allow inspection of the decontaminated materials by the District’s Environmental Consultant prior to removal from the work area.
   c. Contaminated waste shall be disposed in double goosenecked bags or burrito- wrapped as friable asbestos waste.
   d. Minimize excess waste quantities, where feasible.

8. Other: Remove and dispose in compliance with Cal/OSHA requirements under 8 CCR 1529 and AHERA requirements under 40 CFR Part 763.

C. Exterior Procedures (typical):

1. Roofing:
   a. Remove the roofing as indicated by the Contract Drawings by cordonning the work area, setting up drop cloths and abating using wet methods and HEPA vacuums per 8 CCR 1529 Work Class 2 procedures.
   b. Cordon off the work area, installing critical barriers at the roof vents, skylights, HVAC intake louver, etc., as applicable.
   c. For buildings without parapet walls, set-up drop cloths on the ground and nearby objects to contain falling materials on the ground or public access areas surrounding the work area.
   d. HEPA vacuum horizontal surfaces and HVAC rooftop equipment housings following abatement.
   e. Provide a bucket decontamination system, typical.
f. Dispose of roofing as Category 1 non-friable waste, unless otherwise indicated.

2. Caulking:
   a. Remove the caulking as indicated by the Contract Drawings by cordonning the work area, setting up drop cloths and abating using wet methods and HEPA vacuums per 8 CCR 1529 Work Class 2 procedures.
   b. Cordon off the work area, installing critical barriers at the windows, doors, and other penetrations, as applicable.
   c. Set-up drop cloths on the ground and nearby objects to contain falling materials on the ground or public access areas surrounding the work area.
   d. HEPA vacuum the sills and frames following abatement.
   e. Provide a bucket decontamination system, typical.
   f. Dispose of caulking as Category 1 non-friable waste.

3. Window Glazing Putties:
   a. Remove the glazing putties as indicated by the Contract Drawings by cordonning the work area, setting up drop cloths and abating using wet methods and HEPA vacuums per 8 CCR 1529 Work Class 2 procedures.
   b. Cordon off the work area, installing critical barriers at the windows, doors, and other penetrations, as applicable. Remove the window sashes intact where demolition is indicated on the Contract Documents.
   c. Set-up drop cloths on the ground and nearby objects to contain falling materials on the ground or public access areas surrounding the work area.
   d. HEPA vacuum the sills and frames following abatement.
   e. Provide a bucket decontamination system, typical.
   f. Dispose of caulking as Category 1 non-friable waste.

4. Transite Shingles, Flues, or Paneling:
   a. Remove the transite as indicated by the Contract Drawings by cordonning the work area, setting up drop cloths and abating using wet methods and HEPA vacuums per 8 CCR 1529 Work Class 2 procedures.
   b. Cordon off the work area, installing critical barriers at the windows, doors, and other penetrations, as applicable. Remove the transite intact where demolition is indicated on the Contract Documents.
   c. Set-up drop cloths on the ground and nearby objects to contain falling materials on the ground or public access areas surrounding the work area.
d. Where intact removal is infeasible, wrap transite with 2 layers of 6-mil polyethylene sheeting and break tiles, conduits, pipes or panels with a hammer. Double bag chips and pieces for disposal.

e. HEPA vacuum the sills, frames and surrounding substrates following abatement.

f. Provide a bucket decontamination system, typical.

g. Dispose of transite as Category 2 non-friable waste.

5. Other: Remove and dispose in compliance with Cal/OSHA requirements under 8 CCR 1529 and

D. Special Techniques and Procedures

1. Isolate HVAC system(s) to prevent contamination and fiber dispersal to other areas of the building.

   a. Openings to ducts, fans, louvers, and plenums shall be sealed with two layers of polyethylene sheeting prior to the start of removal.

   b. Provide caulked, rigid panels at the discretion of the District.

   c. Repair any damage to ductwork, grilles, dampers, louvers, or HVAC equipment at the completion of the abatement work.

   d. Secure systems and equipment using OSHA lock-out and tag-out procedures, as applicable.

2. Ensure that all electrical power terminating in the work area, including but not limited to outlets and lights are disconnected and cannot be reenergized during the course of the work.

   a. Ensure that all power lines which transit the work area and are necessary for the continued operation of services in areas outside the work area are identified and protected adequately in order not to pose a hazard to workers during the course of work.

   b. Provide temporary power and lighting, and ensure safe installation of temporary sources and equipment per applicable electrical code requirements, and provide safety lighting and ground fault interrupter circuits as power source of electrical equipment.

   c. Secure systems and equipment using OSHA lock-out and tag-out procedures, as applicable.

3. Construct critical barriers and decontamination enclosure systems, as applicable. Erect polyethylene sheeting to protect walls, windows, flooring, and fixed equipment, as applicable.

4. Provide differential air pressure systems for each work area, where indicated, in accordance with Appendix J of the EPA's "Guidance for Controlling Asbestos-Containing Materials in Buildings," EPA 560/5-85-024.

   a. Establish negative pressurization within all Asbestos Work Class 1 areas, exhausting air to the exterior, unless otherwise approved by the District.

   b. Do not locate outlets near or adjacent to other building intake vents or louvers or at the entrances to the building.
c. Do not exhaust air into the building's interior spaces or within fifty (50) feet of the building's supply air intakes without on-site DOP testing of all NPUs to show a filter efficiency of ninety nine and ninety seven hundredths percent (99.97%) minimum.

d. Provide a minimum work area differential air pressure of twenty five hundredths inches water gauge (-0.025 inch w.g.) and four (4) air changes per hour at all times for Asbestos Work Class 1 areas or as otherwise designated by the Contract Documents.

5. Remove ACM employing full isolation, glovebag, and glovebag with mini-containment procedures as designated by material quantities and work class under Cal/OSHA regulation 8 CCR Section 1529.
   a. Glovebag cut-out methods may be used for systems scheduled for demolition as outlined in the Demolition Plans.
   b. Use wet cleaning methods, HEPA vacuuming, and proper work practices.
   c. Mini-containments may not be required for glovebag TSI removal in unoccupied zones provided the bag is evacuated with a HEPA-filtered vacuum prior to the removal of the element being stripped or unless otherwise indicated in the Contract Documents. All areas requiring aggressive clearance air sampling will require mini-containments or full containments and pre-cleaning throughout the isolated area using HEPA vacuums and wet methods.

6. As applicable to abatement of surfacing materials and non-glovebag thermal system insulation removal projects or for other work completed within full isolation containments, remove visible accumulations of asbestos material, debris, and dust from within the work area and its decontamination enclosure systems. Clean all surfaces within the work area.

7. Where encapsulation is required, encapsulate following the District’s pre-encapsulation inspection.

8. Minimize encapsulating of sensitive abated areas or surfaces, such as vinyl floor from wood or concrete substrates, so as not to affect the adhesion of replacement materials.

9. After encapsulation:
   a. Remove the inner layer of polyethylene sheeting from the floor, walls, and other equipment.
   b. Dispose as asbestos waste, as applicable.
   c. Leave all critical barriers with one layer of polyethylene sheeting.

10. After removing the final layer of polyethylene sheeting (as appropriate):
   a. Final-clean all surfaces, including the inner surface of the outer layer of polyethylene that serves as a critical barrier, any subfloor trenches, and similar locations.
   b. Allow adequate time for settlement of dust, then repeat final cleaning operation.
   c. Clean and remove all materials and equipment within the work area, using the equipment decontamination enclosure system.

11. Exterior Asbestos Work Class II abatement operations shall utilize critical barriers, drop cloths, wet methods, and HEPA vacuums as outlined under Cal/OSHA regulation 8 CCR Section 1529.
E. Field Quality Control

1. Site Tests: Clearance Criteria
   a. Clearance air samples using aggressive air sampling techniques shall be collected for all abatement zones, unless otherwise designated in the Contract Documents.

   b. Phase Contrast Microscopy (PCM) Clearances: Areas cleared by PCM shall show an airborne concentration of total fibers for each sample at or below one hundredth fibers per cubic centimeter (≤0.01 f/cc) using the NIOSH 7400A counting rules. Any sample result exceeding one hundredth fibers per cubic centimeter (>0.01 f/cc) shall require recleaning of the work area and retesting. The District, based on the quantity and types of materials removed, configuration, and sequencing of the work areas, and similar considerations, shall determine the minimum number of samples.

   c. When transmission electron microscopy (TEM) clearances are require, as designated by the Contract Documents, analysis shall be by the method described in 40 CFR Part 763, Appendix A, Subpart E (AHERA), with an analysis turn-around time of twenty four (24) hours, unless otherwise designated by the District. Z-test requirements under the AHERA regulations will not apply to any District projects.

   d. The District shall pay the costs of the final round of visual inspections, aggressive air sampling, and PCM and/or TEM analyses that will meet the Specifications. All rounds of visual inspections, aggressive air sampling, and PCM and/or TEM analyses that fail to meet the contract criteria shall be borne by the Contractor. For the purpose of this paragraph, visual inspection includes the area isolation inspection, pre-encapsulation inspection, and final area cleanup inspection.

F. Waste Disposal and Manifesting:

1. Packing, labeling, transporting, and disposing of asbestos materials shall comply with Cal/EPA regulations under 22 CCR, including completion of the Uniform Hazardous Waste Manifest Form (DTSC 8022A, 7/92, and EPA 8700-22), and the requirements of “Waste Disposal and Manifesting,” discussed below.

3.4 WASTE DISPOSAL AND MANIFESTING

A. Hazardous Waste Disposal:

1. Packing, labeling, transporting, and disposing of hazardous waste shall comply with Cal/EPA regulations under 22 CCR, including completion of the Uniform Hazardous Waste Manifest Form (DTSC 8022A and EPA 8700-22). Waste and glovebags shall be properly labeled prior to their removal from the contained or regulated area, including all required asbestos warning labels.

   a. Effective June 1, 2016, bags or containers of protective clothing and equipment, scrap, waste, and debris containing asbestos fibers shall bear the following information: “Danger, Contains Asbestos Fibers, May Cause Cancer, Causes Damage to Lungs, Do not Breathe Dust, Avoid Creating Dust.”

2. Waste dumpsters shall be placarded, sealed, and locked overnight. Waste containers shall be stored to prevent public access or disturbances.
3. A "Waste Manifest" shall be completed for disposal of hazardous waste. The transporter shall possess a valid EPA Transporter I.D. number. The Contractor shall notify the District’s Project Manager at least forty eight (48) hours prior to the time that the Manifest is required to be signed by the District.

4. Applicable information to be included in the "Waste Manifest" includes the following:
   a. EPA Generator I.D. Number: Verify with the Project Manager or the District’s Environmental Services Division.
   b. Generator's Name and Address: Verify with the District’s Project Manager.
   c. Generator Tax I.D. Number: Verify with the District’s Project Manager.

END OF SECTION 02 82 33
# SECTION 02 83 33

## REMOVAL AND DISPOSAL OF MATERIAL CONTAINING LEAD

### TABLE OF CONTENTS

**PART 1 – GENERAL**

1.1 SUMMARY .................................................................................................................................................. 1
1.2 REFERENCES .............................................................................................................................................. 1
1.3 DEFINITIONS .............................................................................................................................................. 2
1.4 SUBMITTALS .............................................................................................................................................. 7
1.5 QUALITY ASSURANCE ............................................................................................................................. 8
1.6 TIME LIMITATION AND DELAY CHARGES .......................................................................................... 9

**PART 2 – PRODUCTS**

2.1 LEAD-RELATED WORK - MATERIALS AND EQUIPMENT ......................................................................... 9
2.2 OTHER HAZARDOUS MATERIALS - MATERIAL AND EQUIPMENT ........................................................... 11

**PART 3 – EXECUTION**

3.1 EXAMINATION ......................................................................................................................................... 11
3.2 PREPARATION .......................................................................................................................................... 11
3.3 LEAD ABATEMENT AND HAZARD CONTROL ....................................................................................... 13
3.4 WASTE DISPOSAL AND MANIFESTING .............................................................................................. 18
3.5 FINAL PROJECT CLEAN-UP AND REOCCUPANCY CLEARANCE CRITERIA ....................................... 19
SECTION 02 83 33

REMOVAL AND DISPOSAL OF MATERIAL CONTAINING LEAD

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes: Minimum requirements for hazardous materials handling, control, and abatement activities, as applicable, including, but not necessarily limited to:

1. Hazardous materials controls.
2. Handling and disposal of lead-based paints and lead-containing materials.
3. Demolition associated with access to hazardous materials.
4. Criteria for abatement zone clearance testing.

B. All wall penetrations are to be treated as drilling through lead-based or lead-containing paints requiring dust controls. Work shall be conducted by personnel with lead awareness training per 8 CCR 1532.1 and the EPA’s RR&P rules. Work shall be performed using High Efficiency Particulate Air (HEPA) filtered equipment, including vacuums, and shall utilize plastic sheeting, sponges, plastic waste bags, water and other required dust controls.

C. Plastic sheeting, minimum 5-ft. square, shall be positioned beneath all drilling or cutout locations and the area shall be closed off from occupancy and other trades using barrier tape. Holes shall be drilled through a wetted sponge or shave cream and debris immediately wiped up and placed within a sealed plastic bag. Most areas will be subject to visual clearances only and shall show no evidence of three-dimensional debris or recleaning will be required at the Contractor’s cost.

D. Related Documents:

1. SFUSD’s AHERA and Lead-Based Paint (LBP) survey files with pertinent information attached to the Contract Documents, where applicable

E. Related Sections:

1. Section 02 26 00 – Lead Abatement Work Plan
2. Section 01 33 00 - Submittals.
3. Section 09 90 00 – Painting.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):


B. American National Standards Institute (ANSI):

2. Z41.1: “Men’s Safety Toe Footwear.”
4. Z87.1: “Practice for Occupational and Educational Eye and Face Protection.”
7. Z89.1: “Requirements for Industrial Head Protection.”

C. National Fire Protection Association (NFPA):


D. California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA):

1. Title 8 California Code of Regulations (8 CCR) Section 5144 - Respiratory Protection.
2. Title 8 California Code of Regulations (8 CCR) Section 1532.1 - Construction Lead Standard.
3. Title 8 California Code of Regulations (8 CCR) Sections 3203 and 1509 - Injury and Illness Prevention Program.

E. U. S. Department of Housing and Urban Development (HUD): Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing,” referred to as the “HUD Guidelines.”

F. U.S. Environmental Protection Agency Renovation, Repair & Painting (RR&P) Rules, effective April 2010 and amendments thereto.

1.3 DEFINITIONS

A. Abatement: as defined by the Department of Public Health for lead hazards work, includes any set of measures designed to reduce or eliminate lead hazards.

B. Activity Class/Category - Lead: Lead hazard designations assigned to work activities that involve lead-containing materials. Activities that fall into Classes I through III, including as examples the operations defined below, are required to assume the following personal airborne exposure levels, unless otherwise demonstrated.
1. **Activity Class I**: exposure below five hundred micrograms per cubic meter (<500 µg/m³).
   a. Surface clean-up of lead-containing dust or debris less than fifteen thousand micrograms per square foot (<15,000 µ/SF);
   b. Spray painting with lead-based paints; Manual demolition of structures (e.g. drywall, plaster, etc.);
   c. Manual sanding, grinding, needle gunning, chiseling, hammering, wire brushing, milling or scraping of lead-based coatings;
   d. Head gun removal of any surface coating; and power tool cleaning with dust collection systems.

2. **Activity Class II**: exposure greater than five hundred micrograms per cubic meter (>500 µg/m³) and less than twenty five hundred micrograms per cubic meter (<2,500 µg/m³).
   a. Using lead mortar;
   b. Lead burning;
   c. Rivet busting;
   d. Power tool cleaning without dust collection systems;
   e. Clean-up of dry abrasive; and
   f. Abrasive blasting enclosure movement and removal

3. **Activity Class III**: exposure greater than twenty five hundred micrograms per cubic meter (>2,500 µg/m³).
   a. Abrasive blasting of any coated surfaces;
   b. Welding on any coated surfaces;
   c. Torching or cutting or any coated surfaces; and
   d. Torch burning of any coated surfaces.

C. **Air Monitoring** - The process of measuring the lead content of a specified volume of air in a stated period of time.

D. **Authorized Visitor** - The Building Owner, or District's Representative, District's Consultant, or a representative of any regulatory or other agency having jurisdiction over the project.

E. **Certified Lead Worker**: includes those who do lead-related construction work activities on a work site under the directions of a Certified Lead Supervisor, including:
   1. Removal, disposal or abatement of loose and peeling lead-based paints as defined by HUD, including scraping, demolition or other Cal/OSHA Activity 1 through 3 work as defined above.
   2. Removal or repair of lead plumbing.
3. Repainting or general construction on surfaces painted with lead-based paints.

4. Removal, enclosing or covering of lead-contaminated soils.

5. Note that renovations, remodeling, painting, operations and maintenance work or other activities listed above that are considered to be interim controls, or lasting under twenty (20) years, may be completed by workers satisfying Cal/OSHA’s lead awareness training requirements only.

F. **Certified Lead Supervisor**: includes those who supervise daily work activities on a lead-related construction site, as well as supervision of repainting or general construction performed on surfaces with lead-based paints where abatement is designed to permanently reduce or eliminate lead hazards for public (non-industrial) buildings or to last more than twenty (20) years. The Certified Lead Supervisor shall oversee the Certified Lead Workers, enforce safe work practices, and schedule and coordinate work site activities with the building occupants and other contractors and consultants.

G. **Competent Person**: An onsite supervisor who has been formally trained in lead related construction and who is capable of identifying lead hazards, substandard and improper lead abatement controls, procedures, practices, and conditions and who has sufficient experience and authority to take prompt corrective measures to eliminate them.

H. **Containment**: as defined by the California Department of Public Health includes any system, process or barrier used to contain lead hazards in a work area, including plastic sheeting, wet scraping, and other lead-safe work practices as described in the HUD Guidelines, Chapter 8.


J. **Fixed Object**: A unit of equipment or furniture in the Work Area that cannot be removed from the Work Area.

K. **Hazardous Lead Waste**: Lead paint debris shall be classified as hazardous due to the characteristic of toxicity, as determined by testing in accordance with the California Code of Regulations, Title 22, Division 4, Chapter 30, Article 11. Any substance(s) listed in Article 11 Section 66699 at concentrations greater than their listed Soluble Threshold Limit Concentration (STLC) or Total Threshold Limit Concentration (TTLC) may need to be further characterized by the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with 40 CFR 261 and other tests prior to disposal as a hazardous waste.

L. **HEPA Filter**: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining ninety-nine and ninety seven hundreds percent (99.97%) of lead particles greater than three-tenths (0.3) microns in diameter.

M. **HEPA Vacuum Equipment**: High efficiency particulate air (absolute) filtered vacuuming equipment with a filter system capable of collecting and retaining lead dust. Filters shall be certified to be of ninety-nine and ninety seven hundreds percent (99.97%) efficiency for retaining particles of three-tenths (0.3) microns diameter or larger.

N. **Lead Dust Clean Up**: Clean up and decontamination of all dust and debris in Work Area. For this project, clean up includes surfaces of the window opening including window sill, jamb, head, sliding window channel and weep holes, inside surface of window, and the surfaces of adjacent wall and floor area.

O. **Lead-Based Paint (LBP)**: Lead-based paint as defined by HUD, EPA, and California DHS is any paint with a lead content that equals or exceeds one-half percent (≥0.5%) lead by weight or one milligrams of lead per square centimeter of surface area (≥1 mg/cm²).
P. **Lead-Containing Paint (LCP)** - is paint with any detectable level of lead. All paints shall be assumed to contain lead unless laboratory testing proves otherwise.

Q. **Lead Paint Related Waste** - Paint chips, vacuum dust, and debris, used cleaning articles, waste water, plastic sheets, and other disposable items which were used during the LBP stabilization process and as a result are considered lead contaminated waste or assumed hazardous waste pending further characterization.

R. **Lead Paint Surface Preparation** - The process of conducting surface preparation to remove loose, flaking, deteriorated paint and sealing the resulting surfaces with primer and at least one finish coat of paint. Primers to be at least one (1) mil in thickness and finish coats to be at least one and on-half (1.5) mil in thickness.

S. **Minor Repairs** - Minor repair includes installation of reinforcement fasteners, installing or re-installing window latches, re-installing window glazing compounds, and freeing windows painted shut using methods which should not damage window components.

T. **Notification:** The process of notifying Owner’s, tenants, Contractors, and/or regulatory agencies in advance of planned abatement activities impacting HUD-defined lead-based paints, includes but is not necessary limited to the following:

<table>
<thead>
<tr>
<th>Agency</th>
<th>Timeline</th>
<th>Min. Quantity</th>
<th>Posting</th>
<th>Project Type</th>
<th>Sent to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cal/OSHA</td>
<td>24 Hrs. Prior to start of abatement</td>
<td>&gt;100 SF or &gt;1 hr. welding &amp; torching</td>
<td>Job site</td>
<td>All building types</td>
<td>Fax to Local Cal/OSHA District office</td>
</tr>
<tr>
<td>CDPH Form 8551</td>
<td>Prior to start of abatement</td>
<td>&gt;100 SF</td>
<td>Job site with copy to Building Owner</td>
<td>School Modernizations and Residential Designed for 20 year improvement with purpose of childhood lead prevention</td>
<td>CDPH Childhood Lead Poisoning Prevention Branch Reports, 850 Marina Bay Pkwy., Bldg. P, 3rd Floor, Richmond, CA 94804-6403; fax: (510) 620-5656 Owner, Tenants or Occupants</td>
</tr>
<tr>
<td>EPA ‘Renovate Right’ pamphlet</td>
<td>Deliver to Owner &amp; Tenants with Affidavit of Receipt or Mail 7 days in advance of work</td>
<td>≥20 SF exterior or ≥6 SF interior</td>
<td>Job site</td>
<td>Residential &amp; Institutional with Children Occupants Under Age 6</td>
<td>Owner, Tenants or Occupants</td>
</tr>
<tr>
<td>San Francisco Dept. of Building Inspection</td>
<td>3 days prior to work</td>
<td>≥10 SF interior or exterior</td>
<td>In accordance w/Bldg. Code Section 3606</td>
<td>Residential &amp; Public Bldgs.</td>
<td>Owner &amp; Tenants &amp; Posting for Neighborhood</td>
</tr>
</tbody>
</table>

U. **Owner** - Owner of the Building/Property, i.e., the San Francisco Unified School District.

V. **Owner's Representative** - Person(s) designated or appointed by the District to represent them in all matters concerning the construction project at the site.

W. **Owner's Environmental Consultant** - The environmental consulting firm and individual representatives of
that firm, hired to provide technical oversight, including observation and monitoring services during the lead stabilization phase of the project.

X. **Owner's Construction Inspector** – District’s Painter Supervisor or Construction Inspector appointed by the Owner to inspect work for conformance with the Contract Documents.

Y. **PPM** – Part per million of lead. HUD-defined lead-based paints are defined as a concentration of 5,000 ppm or 0.5% by weight. The CPSC’s standard for paints effective in 1978 was 600 ppm. The CPSC’s limitation for lead in paints effective August 14, 2009 is 90 ppm.

Z. **Qualified Person** - The individual identified by the Contractor to be responsible for conducting air sampling, calibration of air sampling pumps, evaluating sampling results, and conducting respirator fit tests.

AA. **Recognized Training/Educational Institution** - University, college, or a professional training organization funded by or meeting U.S. Environmental Protection Agency (EPA) and/or California Department of Health Services (DHS) accreditation requirements for contractors performing lead-related construction work.

BB. **Removal** - All herein specified procedures necessary to remove and clean-up all lead-based paint (LBP) from the designated areas and to dispose of these materials at an acceptable site in accordance with Federal, State, and Local Regulations.

CC. **Stabilization** - See Lead Paint Surface Preparation.

DD. **STLC** – Soluble Threshold Limit Concentration; California extraction test for leachable lead established under Title 22 CCR at 5 mg/liter.

EE. **TCLP** – Toxicity Characteristic Leaching Procedures; Federal extraction test for lead at 5 mg/liter.

FF. **TTLTC** – Total Threshold Limit Concentration per SW84 test for lead at 1,000 mg/kg.

GG. **Visually Clean** - Free of visible dust, paint chips, dirt, debris, or films removable by vacuuming or wet cleaning methods specified. For outside soil or ground cover areas, visually clean shall mean free of construction or paint debris, chips, or dust distinguishable from the initial soil or ground conditions.

HH. **Wet Cleaning** - The process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been washed with specified detergent solutions and rinsed with clean water. Includes use of 10% solution of chlorine bleach for mildew clean up.

II. **Window Area** - The window and associated components including but not limited to interior window sills (stool), exterior window sills on wood windows, window troughs and wells on metal and aluminum windows, framing, head, jamb and trim.

JJ. **Window Sill (Interior)** - That portion of the horizontal ledge that protrudes into the interior of the room, technically called a window stool.

KK. **Window Sill (Exterior)** - That portion of the horizontal window frame ledge that extends to the exterior. Usually includes window well or trough areas.

LL. **Window Trough** - That portion of the horizontal window sill that receives both the upper and lower window sashes or double hung window when they are lowered; the metal channel on sliding windows; and the trough, well or depression in the metal frame at the bottom of steel casement windows.

MM. **Window Well** - Same as window trough.
NN. **Work Area** - Designated and controlled areas in which lead-based paint (LBP) stabilization, lead dust clean up and mildew clean up actions are undertaken or which may become contaminated as a result of such stabilization actions. A Work Area is a controlled area delineated at minimum by barrier tape (or similar means) and signage to restrict access to Authorized Personnel. In some instances a higher degree of physical isolation and control may be required and specified.

OO. **Working Day** - Monday through Friday, excluding legal and District holidays, during normal daytime hours. The amount of time allotted during each Working Day shall not exceed eight and one half (8.5) hours in length including one half (0.5) hour for lunch without prior District approval in writing.

1.4 **SUBMITTALS**

A. **Lead-Related Work:**

1. Submittals the following, in accordance with Section 01 33 00 - Submittals, prior to commencement of the lead-related work:

   a. Worker documentation, including:

      1). Current worker lead training certificates (see Section 02 26 00 Lead Abatement Work Plan for job specific requirements).

      2). Respiratory fit test records within the past twelve (12) months minimum, or in compliance with 8 CCR 5144.

      3). Medical examination approvals for respirator use within the past 12 months, or in compliance with 8 CCR 5144.

      4). Blood lead test within past 90 days.

      5). Current General Contractor or representative subcontractor’s Certified Renovator’s Certificate for work with regularly occupancy by children age 6 or younger.

   b. Abatement Plan prepared by a Certified Lead Supervisor, Certified Lead Project Monitor, or Certified Lead Project Designer including:

      1). Detailed lead hazards control and management measures, including the procedures and practices for protection of building occupants, public, and the environment.

      2). A detailed description of abatement methods, locations and components where abatement is planned, signage and security measures.

      3). A recommended schedule for reinspection.

      4). Instructions to maintain potential lead hazards in safe condition.

      5). Detailed plan for transportation and final disposal of lead paint and chip-related wastes generated by this work in accordance with all applicable Federal, State, and Local regulations. Provide name and address of waste transporter and disposal sites for lead hazardous wastes.

   c. Notifications: Submit as applicable:
1). California Dept. of Health Services’ Abatement of Lead Hazards Notification (Form 8551),
generally limited to school modernization work.

2). Cal/OSHA Pre-Job 24-hr. Notification in accordance with Cal/OSHA 8 CCR 1532.1.

3). USEPA’s RR&P ‘Renovate Right’ pamphlet and affidavit.

d. Safety data sheets (SDS) for chemicals used.

2. Submit the following, in accordance with Section 01 33 00 - Submittals, within five (5) calendar days
   of the request by the District or within five (5) calendar days of completion of the abatement or hazard
   control work.

   a. Updated worker documentation, as needed.

   b. Contractor periodic personal air-monitoring results.

   c. Receipt and weight tickets from landfill operator or recycler as applicable.

   d. Waste profiling data (TCLP, WET, and SW846, as applicable).

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Lead Abatement Work: Only qualified persons with CDPH approved Lead Workers training, current
   medical examinations and approval for the use of respiratory protection, and current fit testing of
   respirators under the direct supervision of a CDPH approved Lead Abatement Supervisor shall engage
   in work defined under Cal/OSHA regulation 8 CCR 1532.1 affecting lead-based paints and lead
   construction hazards, including but not limited to:

   a. Working in an environment where lead exposures exceed 30 micrograms per cubic meter.

B. Regulatory Requirements: The Contractor shall be alerted to and familiar with the following laws and
regulations regarding the hazards, control measures, management, characterizing, transport and disposal of
hazardous wastes:

1. Lead Hazard/Abatement Work: All labor, materials, facilities, equipment, services, employees and
training, and testing necessary to perform the work required for lead abatement, demolition,
decontamination, hazard control, and disposal of waste shall be in accordance with these Specifications
and the most current regulations, including but not limited to:

   a. Environmental Protection Agency National Ambient Air Quality Standards, as applicable (40 CFR
   61).

   b. Environmental Protection Agency’s Renovation, Repairs and Painting (RR&P) rules effective
   April 2010 and amendments thereto.

   c. Occupational Safety and Health Administration (inclusive of OSHA 29 CFR 1926.62).

   d. California Department of Occupational Safety and Health (inclusive of Cal/OSHA 8 CCR 1532.1).
e. California Environmental Protection Agency (Cal/EPA), Title 22.

f. California Department of Public Health (17 CCR Sections 35001 -35099).

g. Other applicable federal, state, and local governmental regulations pertaining to lead hazards and lead waste.

C. Meetings:

1. Pre-Construction or Pre-Abatement Meeting:

   a. Prior to any abatement work, the Contractor is to attend a pre-construction meeting to be attended by representatives of the District, the District’s Consultants, the Contractor, the Hazardous Materials Abatement Subcontractor, and other Subcontractors whose work may be affected. The meeting agenda shall include the following considerations:

      1). Review of the Specifications and Plans in detail related to the abatement and hazards work. All conflicts and ambiguities, if any, shall be discussed.

      2). Review the project conditions, schedule, construction sequencing, abatement application requirements, and quality of completed work.

      3). Review in detail the means of protecting adjoining areas, protect of Contractor’s, Subcontractor’s, District’s workers, and completed work during the abatement activities.

      4). Pre-job submittals requirements.

      5). Site security requirements.

2. Weekly Meetings: At the District’s option, abatement projects extending over one week in length may require attendance of the Contractor at a weekly progress meeting. The purpose of this meeting is to review abatement and project scheduling, coordination with other trades, security and site-specific requirements.

1.6 TIME LIMITATION AND DELAY CHARGES

A. Complete all lead, and other hazard work specified in this Section in no more than the allotted calendar days or work shifts as outlined in the Abatement Work Plan or as otherwise specified in the Contract Documents.

PART 2 – PRODUCTS

2.1 LEAD-RELATED WORK - MATERIALS AND EQUIPMENT

A. Protective Devices:

   1. Polyethylene drop cloths and dust barriers, temporary wash stations or showers, disposable clothing, respirators, gloves, hard hats, and other required items.

   2. Respirators shall protect against lead and other appropriate dusts, fumes and mists as approved by:
a. The Mine Safety and Health Administration (MSHA).


B. Sealants and Polyethylene Sheet:

1. Polyethylene sheeting shall be flame-retardant and approved and listed by the State Fire Marshal in accordance with Section 13121 and/or 13144.1 of the California Health and Safety Code.

   a. Thickness and Size: 6-mil thick minimum, unless otherwise specified, sized to minimize the frequency of joints.

   b. Flammability: Comply with NFPA Standard 701 with a flame spread rating of no greater than five (<5) and a smoke development rating of no more than seventy (<70) when tested in accordance with ASTM E84 procedures.

C. Sealing Tape shall conform to the following:

1. 2-inches or wider, capable of sealing joints of adjacent sheets of polyethylene and attaching polyethylene sheet to finished or unfinished surfaces or similar materials.

   a. Tape shall be capable of adhering under dry and wet conditions, including use of amended water.

   b. Preservation Sealing Tape: Type specifically designed for adhering to critical or sensitive surfaces without damage to surface; 3M or equal.

   c. Spray adhesives shall not contain methylene chloride or methyl chloroform (1,1,1-trichloroethane) compounds.

   d. Fire resistant sealants shall be compatible with concrete, metals, wood, cable jacketing and other materials capable of preventing fire, smoke, water and toxic fumes from penetrating through sealants.

      1). Sealants shall be asbestos free and shall have a flame spread, smoke and fuel contribution of zero.

      2). Sealants shall be ASTM- and UL-rated for three (3) hours for standard method of fire test for firestop systems.

D. Provide waste receptacles that meet federal and State regulations.

E. Paint Removers shall conform to the following:

   1. Non-flammable removing solvents or gels, with a flash point above one hundred and forty degrees Fahrenheit (>140 deg. F.).

   2. Solvent waste shall not result in the generation of hazardous waste as described under 22 CCR, Division 4.

   3. Removers shall not contain methylene chloride, halogenated hydrocarbons, or any of the following glycol ethers.
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Abbrev.</th>
<th>CAS#</th>
<th>Chemical Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethylene glycol methyl ether</td>
<td>EGME</td>
<td>109-86-4</td>
<td>2-methoxyethanol</td>
</tr>
<tr>
<td>ethylene glycol methyl ether acetate</td>
<td>EGMEA</td>
<td>110-49-6</td>
<td>2-methoxyethyl acetate</td>
</tr>
<tr>
<td>ethylene glycol ethyl ether</td>
<td>EGEE</td>
<td>110-80-5</td>
<td>2-ethoxyethanol</td>
</tr>
<tr>
<td>ethylene glycol ethyl ether acetate</td>
<td>EGEEA</td>
<td>111-15-9</td>
<td>2-ethoxyethyl acetate</td>
</tr>
<tr>
<td>ethylene glycol dimethyl ether</td>
<td>EGDM</td>
<td>110-71-4</td>
<td>1,2-dimethoxyethane</td>
</tr>
<tr>
<td>ethylene glycol diethyl ether</td>
<td>EGDE</td>
<td>629-14-1</td>
<td>1,2-diethoxyethane</td>
</tr>
<tr>
<td>diethylene glycol</td>
<td>DEG</td>
<td>111-46-6</td>
<td>2,2'-dihydroxyethyl ether</td>
</tr>
<tr>
<td>diethylene glycol methyl ether</td>
<td>DEGME</td>
<td>111-77-3</td>
<td>2-(2-methoxyethoxy) ethanol</td>
</tr>
<tr>
<td>diethylene glycol ethyl ether</td>
<td>DEGE</td>
<td>111-90-0</td>
<td>2-(2-ethoxyethoxy) ethanol</td>
</tr>
<tr>
<td>diethylene glycol dimethyl ether</td>
<td>DEGDME</td>
<td>111-90-6</td>
<td>bis(2-methoxyethoxy) ether</td>
</tr>
<tr>
<td>triethylene glycol dimethyl ether</td>
<td>DEGDME</td>
<td>112-49-2</td>
<td>2,5,8,11-tetraoxadecane</td>
</tr>
<tr>
<td>dipropylene glycol</td>
<td>DPG</td>
<td>110-98-5</td>
<td>2,2-dihydroxyisopropyl ether</td>
</tr>
</tbody>
</table>

F. Cleaning Agents: Cleaning agents, equipment, and methods employed shall not in any way damage the substrate or adjoining surfaces and finishes. Cleaning solvents shall be non-injurious to the surfaces upon which they are applied. The methods used shall cause no pitting, erosion or damages to the surfaces.

1. Do not use chemicals that may attach or leave deposits on the substrate material.

2. Modify the process or processes to suit the finish, hardness, and condition of the surface to be cleaned.

G. Vacuums and negative pressure units shall be HEPA-filtered for clean-up of loose debris and contaminants. Provide DOP testing on-site for all units, unless otherwise noted in the Abatement Work Plan.

2.2 OTHER HAZARDOUS MATERIALS - MATERIAL AND EQUIPMENT

A. Waste Containers:

1. Provide sealable metal drums, 55-gallon capacity, with sealable lids, as necessary. Label the drums in accordance with EPA and DTSC requirements, including the Generator I.D. or location identification and manifest number. Drums shall be air and water tight.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Review the hazardous material report(s) to familiarize oneself with hazardous material locations and conditions, and previous abatement by others, as applicable.

B. Review site conditions to verify quantities, work zones, available utilities, security, etc.

3.2 PREPARATION

A. Minimum Protective Procedures for Lead-Related Work:

1. Follow, at the minimum, dust control procedures as outlined under Cal/OSHA regulation 8 CCR 1532.1, the EPA’s RR&P rules, and CDPH regulation 17 CCR Sections 35001 through 36100, as applicable.
   a. Use respirators approved by the National Institute for Occupational Safety and Health (NIOSH).
   b. Provide respiratory protection to employees involved with lead-based paint demolition and/or abatement elements or as required for demolition work where employees may be occupationally exposed to lead at or exceeding the Action Level (AL) at no cost to the employees or District.
   c. Workers shall wear appropriate respiratory protection during lead hazards work, unless initial testing verifies that employee exposures are below the Action Level.

3. Site security to assure that no member of the public is able to gain access to regulated work areas. Maintain access and egress routes at all times.

4. Worker training, respiratory protection, medical examinations, and blood lead monitoring to meet applicable regulations.

5. Activity Class I work areas, as a minimum, with a two (2) stage decontamination assembly, including an equipment and contiguous clean room with bucket wash-up facilities positioned as follows:
   a. Equipment Room shall have lockers or labeled bags and containers for storing contaminated protective clothing and equipment.
   b. Clean Room shall have lockers or containers for storing employee's street clothes and personal items. Clean Room shall also contain a suitable supply of potable water to permit each employee to wash his or her hair, hands, forearms, face and neck.

6. Sufficient sets of protective full-body clothing for workers to be worn in designated work area and/or whenever a potential airborne lead hazard exists. Clothing shall include, but not be limited to, full-body coveralls, headgear, eye protection, and gloves. Disposable-type protective clothing, headgear and footwear are acceptable.

7. Full-Body Clothing: Workers shall wear hoods covering their hair in the designated lead hazard work areas at all times.
   a. Wearing of protective clothing, in lieu of street cloths, outside the work area is not permitted.
   b. Non-disposable-type protective clothing and footwear shall be left in the Wash Room decontamination assembly for disposal.
   c. The use of cloth coveralls following the prescribed laundry procedures as identified in 8 CCR, 1532.1 is acceptable.

8. Eye Protection: Eye protection, conforming to ANSI Z87.1 shall be worn at all times within the lead hazard areas.

9. Head Protection: Hard hats or other head protection as required by applicable safety regulations and conforming to ANSI Z89.1, Class A or B.

10. Foot Protection: Construction workers shall use non-skid footwear conforming to ANSI Z41.1, Class 75.
B. Site Protective Controls:

1. Protect against unnecessary disturbances or damages to sensitive finishes or furnishings that will remain within the facility.

2. Locate temporary scaffolding and containment barriers, as required, and proceed with the construction or demolition, allowing for continued operation of any adjacent occupied areas, as applicable.

3. Protect existing furnishings and building finishes from water, lead dusts, or chemical strippers.

4. Erect temporary protective covers over pedestrian walkways and at points of passage for persons or vehicles that are to remain operational during the lead hazard work.

5. Exterior lead hazard operations shall utilize mini-containments, drop cloths, wet methods, and HEPA vacuums as outlined in Cal/OSHA regulation 8 CCR Section 1532.1 and the HUD Guidelines, Chapter 8.

6. The District may evaluate the lead dust concentrations outside the work area on adjoining finishes during the work progress by collecting wipe samples to evaluate the integrity of the containment and to detect dust contamination.

7. Evaluation will review possible contamination resulting from:
   a. Failure to adequately cordon off or contain work area dusts, clean-up debris, and use approved work practices, such as wet wiping and HEPA vacuuming.
   b. Failure or breaches in the work area isolation containment.
   c. Failure or rupture in the negative pressurization/HEPA filtration system.
   d. Incomplete decontamination of personnel or equipment removed from the work area(s).

8. Perimeter wipe samples may be collected adjacent to each work area and compared to the pre-construction background concentrations. The District will analyze the wipe sample by flame atomic absorption per NIST Standard 1578.

9. The Contractor shall reclean adjoining occupied areas with surface concentrations exceeding background level or eight hundred micrograms per square foot (>800 µg/SF) during the construction activities. The Contractor shall bear the costs (including engineering, administrative, housekeeping, analytical and the labor and materials costs of the District’s consultant(s)) to return surface lead concentrations in elevated areas to acceptable levels.

3.3 LEAD ABATEMENT AND HAZARD CONTROL

A. Notifications: Cordon off active lead hazard and abatement zone(s) and post with warning signs at entries to regulated areas bearing the following information:

   Warning
   Lead Work Area
   Poison
   No Smoking or Eating
   Authorized Personnel Only
B. Procedures:

1. Abatement of lead-based paints and presumed lead-based paints as defined by HUD and as regulated under the California Department of Public Health’s Title 17, California Code of Regulations (CCR), Division 1, Chapter 8, “Accreditation, Certification, and Work Practices in Lead-Related Construction,” Article 1, Sections 35001 et al, and Article 16, Sections 36000 and 36100 shall:

a. Include posting and delivery of notifications prior to conducting abatement, including:

   1). Completing CDPH Form 8551 (12/97) and posting all entrances to the structure at least 5 days prior to conducting abatement. The posted form shall not be removed until abatement is completed and a clearance inspection has been conducted.

   2). Deliver of the completed CDPH Form 8551 to the Department of Public Health, c/o Notification at the Childhood Lead Prevention Program Branch, 850 Marina Bay Parkway, Building P, 3rd Floor, Richmond, CA 94804-6403; fax: (510) 620-5656.

   3). Retain records of notification for at least three (3) years.

   4). Notifications posted per the San Francisco Dept. of Building Inspections for interior and exterior lead abatement work, prior to the beginning of work, as well as 3 business days prior notification to adjoining properties for exterior abatement work per San Francisco Building Code, Chapter 36.

b. Be conducted only by a Certified Lead Supervisor or a Certified Lead Worker. The Certified Lead Supervisor shall be on-site during all work site preparation and during the post-abatement clean-up of work areas. At all other times when abatement is conducted, the Certified Lead Supervisor shall be on-site or available by telephone, pager or answering service, and able to be present at the work area in no more than two (<2) hours.

c. Be conducted using containment in a manner such as not to contaminate non-work areas with lead dust, soil, or paint debris.

d. Be conducted in accordance with procedures specified in the HUD Guidelines, Chapters 11 and 12.

C. Loose and Peeling Paint:

1. Scrape loose and peeling paints using dust control procedures and procedures as outlined under Cal/OSHA Regulation 8 CCR 1532.1.

2. Characterize the waste for possible disposal as a hazardous waste.

D. Lead Paint Abatement:

1. Remove paints on structural steel components scheduled for welding or torching using a chemical stripper, needle gun or other approved methods as outlined in the approved Contractor’s Hazardous Materials Management Plan (HMMP). Note that spot abatement of structural steel components does not eliminate the possible need for respiratory protection and hazard controls by the welder or torcher under 8 CCR 1529 due to unabated residues or paints on back-to-back components, which can not be accessed for abatement.
2. Use drop cloths, polyethylene barriers, Hudson and airless sprayers and other methods as required for dust control.

3. Characterize and dispose of paints, rags, etc., separately for possible disposal as a hazardous waste.

E. Lead Dust Clean-up:

1. Clean-up background or construction-related dusts from demolition of lead-coated elements or other contaminant sources using wet methods and HEPA-filtered vacuums.

2. Do not dry sweep.

F. Lead Hazard Control:

1. Scrape loose and peeling paints and use dust controls for demolition of lead-coated architectural and structural elements as indicated by the Demolition Plans, following minimum procedures as outlined under Cal/OSHA Regulation 8 CCR 1532.1.

2. Remove and dispose of intact lead-coated architectural and structural elements as non-hazardous waste.

3. HEPA vacuum residual debris and wet wipe affected substrates as required for clearance inspection or testing.

G. Special Procedures and Techniques:

1. Cordon off the proximity (within approximately 20 feet) of Activity Class I work areas using construction tape, polyethylene dust barriers, or other appropriate means.
   a. Persons entering the regulated "cordoned" work area shall wear appropriate respiratory protection and full body coveralls.
   b. Affix appropriate warning signs at the entry and approaches to the regulated area(s).

2. Lockout electrical and HVAC equipment within the regulated area as necessary.

3. Protect floors, furnishings, landscaping, and other items with polyethylene drop cloths or other acceptable means to prevent contamination or damage to other building surfaces and finishes.

4. Apply chemical strippers and scrape following the manufacturer's recommended procedures. After scraping, remove remaining loose paint with a HEPA vacuum.

5. Maintain work area surfaces as free as practicable from accumulated dust or debris. Clean equipment, tools and containment structures within regulated areas, at a minimum, with HEPA vacuums or wet methods.

6. Conduct operations to prevent injury to adjoining facilities, persons, motor vehicles, and other items as applicable.
   a. Prevent chemical cleaning agents from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other items and other surfaces that could be injured or damaged by such contact.
b. Do not spray or scrape outdoors during winds of sufficient force to spread cleaning agents to unprotected surfaces.

7. For areas where removal of loose and peeling paints only are required, the Contractor shall ensure that the paint that remains on walls, ceilings, eaves, and other surfaces in areas of active work, as applicable, shall be adhered to the substrate sufficiently to support eventual repainting. Paints that peel or loosen during wetting will become part of the scope of work scheduled for removal and disposal.

8. Where complete removal of lead coats is required, finished work shall show no signs of stains, scratches, streaks, or runs of discoloration from use of cleaners.
   a. Leave substrate surfaces neat and clean, including removal of primers in addition to finish coats. Surfaces shall be uniformly cleaned.
   b. Neutralize substrate using a TSP and detergent wash.

9. Where mechanical sanding or removal of lead-based paints is required, the Contractor shall fully contain the work area, establish negative pressurization of the contained zone, and attach HEPA-filtration devices to all mechanical tools. Upgrades in respiratory protection shall be provided as required under 8 CCR 1532.1.

10. Avoid direct welding or cutting on surfaces containing lead coatings by mechanically or chemically removing the coating to a distance of at least four to six inches outboard in all directions from the point at which heat is applied.
   a. If surface coatings are not removed prior to welding or cutting, provide local exhaust ventilation to capture the aerosolized lead, using HEPA filters.
   b. If surface coatings are not removed prior to torching or welding, provide upgraded welder’s respiratory protection in compliance with Cal/OSHA regulation 8 CCR 1532.1.
   c. Complete similar advance stripping for surfaces with Chromium VI or cobalt coatings.

11. Where mechanical removal of surface coatings constitutes a Level II activity, provide power tools, to the extent feasible, with local HEPA exhaust or dust collector systems to capture the aerosolized lead.

H. Demolition Procedures:

1. Removal of obstructing materials as needed for access to hazardous materials.
2. Removal of obstructing materials where hazardous materials contamination is known to exist.
3. Removal of obstructing materials where hazardous materials exposure is likely to result.
4. Follow, at the minimum, the protective procedures as outlined in Cal/OSHA regulation 8 CCR 1532.1.
5. Protection of Visitors and Other Site Personnel: Cordon off the abatement area(s) with appropriate signs, and provide temporary tunneling or scaffolding, as applicable.
I. Prohibited Activities:

1. Workers shall decontaminate themselves and appropriate equipment prior to eating, drinking and smoking.

2. Clean debris and surfaces with HEPA-filtered vacuums or wet methods.

3. Shoveling, wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and are found to be ineffective.

J. Field Quality Control

1. Site Test: Monitoring and Clearance by the District:

   a. During lead hazard-related work, such as demolition, refinishing, or torching and welding activities, the District may collect air samples for analysis by flame atomic absorption.

   b. Air sampling results in excess of the Cal/OSHA "Project Action Level" of thirty micrograms per cubic meter (30 µg/m³) within the construction zone may require isolation of the work area, upgrades in the required respiratory protection, amendment of work procedures, and/or clean-up of the affected area.

   c. Air sampling results in excess of the EPA's National Ambient Air Quality Standard (NAAQS) of one and one-half micrograms per cubic meter (1.5 µg/m³) at the site's property line or at adjoining occupied non-construction areas may require isolation of the work area, amendment of work procedures, and clean-up of the affected area.

   d. Resampling of the contaminated areas and handling, shipping, and analysis charges (including the District’s time and expenses) for additional sampling required to show background levels below these lead standards shall be borne by the Contractor.

K. Clearance Criteria -- Lead Abatement Zones:

1. The lead abatement zone shall remain secured until cleared by the District.

2. Visual Inspection:

   a. When the Contractor considers the work or a designated portion of the work to be complete, the Contractor shall notify the District’s Project Manager that the work is ready for abatement zone clearance inspection.

   b. Within a reasonable time after receiving notification from the Contractor, the District will perform a visual inspection of the work area.

   c. Evidence of lead contamination identified during the inspection will necessitate further cleaning as specified herein.

3. Wipe Sample Clearance Criteria: The Contractor shall reclean the area if surface concentrations exceed the following "EPA Clearance Dust Standards:"

   - 10 micrograms/ft² for floors
   - 100 micrograms/ft² for interior window sills and stools
100 micrograms/ft² for exterior window sills and interior window wells

4. Resampling of the contaminated areas and handling, shipping, analysis charges (including the District’s time and expenses) for additional sampling required to show background levels below these lead standards shall be borne by the Contractor.

L. Waste Disposal and Manifesting:

1. Comply with current federal, State and local regulations concerning the waste handling, containerization, transportation, and disposal of lead-based paint or lead-contaminated materials as discussed under “Waste Disposal and Manifesting” below.

2. Loose debris and scraped materials shall be treated as hazardous waste, unless otherwise approved by the District. Construction waste coated with intact LBP may be disposed of as construction debris in accordance with the Cal/EPA requirements.

3. Laboratory costs associated with analyses required for disposal, if required, shall be at the Contractor's expense.

4. Segregate, containerize, and characterize construction debris including rags, protective coveralls, polyethylene sheeting, and other consumable items. Waste shall be packaged in accordance with the applicable U. S. Department of Transportation regulations included in 49 CFR Parts 173, 178 and 179.

5. Profile waste with an approved landfill or incinerator by means of standard digestion and extraction tests (TCLP, WET, and SW846), as appropriate. Use the facility's EPA Generator I.D. number on the "Waste Manifest." See additional requirements specified below in Article titled "Manifesting."

6. If debris is to be recycled, provide a bill of lading and a memorandum from the recycler acknowledging that lead may be present and work activities and disposal will comply with applicable regulations. Submit in accordance with procedures of Section 01 33 00 - Submittals.

3.4 WASTE DISPOSAL AND MANIFESTING

A. Hazardous Waste Disposal:

1. Packing, labeling, transporting, and disposing of hazardous waste shall comply with Cal/EPA regulations under 22 CCR, including completion of the Uniform Hazardous Waste Manifest Form (DTSC 8022A and EPA 8700-22). Waste and glovebags shall be properly labeled prior to their removal from the contained or regulated area, including all required lead warning labels.

2. Waste dumpsters shall be placarded, sealed, and locked overnight. Waste containers shall be stored to prevent public access or disturbances.

3. A "Waste Manifest" shall be completed for disposal of hazardous waste. The transporter shall posses a valid EPA Transporter I.D. number. The Contractor shall notify the District’s Project Manager a least forty eight (48) hours prior to the time that the Manifest is required to be signed by the District.

4. Applicable information to be included in the "Waste Manifest" includes the following:
   a. EPA Generator I.D. Number: Verify with the District’s Project Manager.
   b. Generator's Name and Address: Verify with the District’s Project Manager.
c. Generator Tax I.D. Number: Verify with the District’s Project Manager.

3.5 FINAL PROJECT CLEAN-UP AND REOCCUPANCY CLEARANCE CRITERIA

A. Lead:

1. Final Reoccupancy Cleaning:

   a. Final clean-up prior to District reoccupancy shall include wet wiping using a TSP solution and HEPA vacuuming all suspect dust and debris areas.

   b. Areas that do not comply with the “Final Reoccupancy Clearance Criteria” shall continue to be cleaned by and at the Contractor's expense until the specified criteria is achieved, as evidenced by results of inspections as previously specified.

END OF SECTION 02 83 33