shall be wet scrapped or HEPA vacuumed prior to removal. The paint chips shall be contained either in the HEPA vacuum or in a separate six (6) mil polyethylene bag. Temporary encapsulants expressly for this purpose are also acceptable.

5. Components that are removed for replacement shall be temporarily wrapped for transport to the dumpsters. Care shall be taken when transporting leaded components from the work area to the dumpster. All leaded components shall be sealed in air tight containers from transport to the dumpster. Once the material has been transferred, it shall be removed from the container and placed in the lined dumpster. Specific components and abatement procedures are:

a. **Drainage Components**

   (1.) **Gutter and downspouts.** A pry device may be used to carefully remove all brackets and hardware providing support to the gutters and downspouts. Once the brackets have been removed, carefully remove and lower gutters and downspouts to the ground. To not drop or handle in a way that will cause additional damage to the painted surfaces. Once the gutters and downspouts are removed, cut into manageable lengths no greater than three (3) linear feet in length. Remove all nails prior to disposal.

   (2.) **Drainage Boots.**

   A pry device may be used to carefully remove all brackets and hardware providing support to the drainage boots. Carefully remove the drainage boots for disposal. Where required, excavate to a depth of six (6) inches below grade and snap cast iron boot to be capped by General Contractor. Boots may be stripped of lead-based paint on site and then disposed of as construction debris. All on-site stripping shall be performed in a secure area approved by the Consultant in accordance with Section 3.1.

b. **Exterior Trim.** A pry device shall be utilized to carefully remove the exterior trim. Once the exterior trim has been removed, the resulting material shall be cut into lengths that are easily managed for the purposes of containerization. Carefully lower trim boards to the ground; do not drop.

c. **Canopies.** A pry device shall be utilized to carefully remove the individual components of the canopies. Remove each component of the canopy and carefully lower to the ground. Care shall be taken to preserve the integrity of the structural elements of the canopies. Coordinate removal of existing lighting with the Electrical Subcontractor. Containerization shall be accomplished by removing or flattening all nails to prevent punctures or tearing.

d. **Attic Vents.** A pry device shall be utilized to carefully remove the attic vents. Remove each attic vent and associated trim components and carefully lower to the ground. Care shall be taken by the Abatement Subcontractor to avoid damaging existing roofing felts and shingles. If damaged shingles are observed by the Abatement Subcontractor before work commences, the Consultant must be informed. Failure to inform the Consultant will result in the Abatement Subcontractor assuming responsibility for the damage.

e. **Porch Lattice.** Carefully detach porch lattice from facade of building and porch landing.
for disposal.

f. Exterior Wood Shingles, Clapboards, and Soffit. A pry device shall be utilized to carefully remove the exterior wood shingles, clapboards, and soffit. When siding and soffits, avoid dropping a distance greater than ten (10) feet. Continuously control dust utilizing an airless spray or apply a light application of water. Avoid damaging felt paper at all buildings. Do not allow waste to accumulate. Remove or bend back all nails from existing sheeting. Cut clapboard to sections no greater than three (3) feet lengths. Containerization shall be accomplished by removing or flattening nails to prevent punctures or tears in container lining.

g. Electrical Conduit. On all lead painted surfaces, carefully remove electrical conduit by using a pry device (crow bar "pig’s foot", etc.) in such a manner as to protect integrity of conduit and adjacent surfaces from damage. Coordinate and perform work under supervision of the Electrical Subcontractor.

1. The Abatement Subcontractor shall perform all procedures as defined in Section 02090 3.7.3 A.

2. All windows sashes, sills, jambs, and trim on basement windows shall be removed down to a base substrate surface (rough opening).

i. Removal of Window Components

1. Execution of component removal shall follow applicable methods specified in this section. Window component removal shall be limited to the individual components listed in Section 3.0 of this specification.

2. Preparation procedures identified in 3.1 and 3.2, shall be strictly adhered to. Using a HEPA vacuum equipped with a metal attachment, remove and vacuum all loose chips and flakes of paint from window trough components and remove existing exterior storm windows and screens and dispose of as construction debris.

3. Any damage to adjacent surfaces due to component removal shall be repaired and restored with similar or better materials to the approval of the Owner.

4. The sequence of work for component removal shall follow this prescribed order:
   a. Unscrew exterior stops and remove
   b. Remove top sash
   c. Remove parting beads with pry or pliers
   d. Remove bottom sash
   e. Using a pry, remove right and left side window trough casings
   f. Pry off head stop
   g. Remove existing mullions
   h. Remove exterior header
   i. Remove all loose dirt and debris, HEPA vacuuming all surrounding surfaces and window well
   j. Follow procedure of 5. below

5. After initial clean-up procedures are completed the following shall occur:
a. Inspector shall be notified of completion of window removal and clean-up
b. Inspector will perform a visual inspection
c. Once acceptable, encapsulate window components with white latex spray paint
d. Keep critical barriers intact
e. If no visible debris is found, window replacement shall proceed as specified in Section xx of Architectural Specifications.

J. Removal of exterior door jambs and casings and exterior doors.
1. Removal of doors, door jambs and casings shall be limited to the following:
   a. Front and back entrances
2. Any damage to adjacent surfaces due to component removal, shall be repaired and restored with similar or better materials to the approval of the Owner.
3. All door jambs and casings scheduled for abatement will be removed according to this prescribed sequence.
   a. Preparation procedures shall be performed as described in 3.1 and 3.2.
   b. Carefully score paint and caulk lines at walls adjoining casings with razor knife. Removal of jambs and casings shall not damage existing plaster or gypsum board and paint.
   c. Carefully pry jambs and casings from wooden anchors and remove, using a wood block at the fulcrum point to protect the plaster.
   d. Remove any protruding paint ridges. Scrape and HEPA vacuum all loose paint and debris.
   e. Fill damaged spaces with plaster to make walls smooth.
4. After initial cleanup procedures are completed, the following shall occur:
   a. Inspector shall be notified of completion of removal and proper cleanup.
   b. Inspector will inspect for any visible dust or debris.
   c. After approval is given by Inspector, door system installation shall occur without the removal of the mini-containment chamber.
   d. Once door system is installed according to the specification, chamber may be removed after HEPA-vacuuming of the chamber surfaces.

3.7.3 CAUSTIC PAINT REMOVAL - PROCEDURES

A. General. Caustic paste application and use shall be in accordance with manufacturer’s instruction for each product. Prior to beginning the application, all accumulated dust, dirt, and visible oil and grease shall be removed with a five percent TSP and water solution or other equally effective cleaning agent. When a caustic stripping agent is used as the abatement agent, the Abatement Subcontractor shall provide and ensure the use of
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the following items:

- Full-body coveralls with hood impervious to caustic substances;
- Gloves impervious to caustic substances;
- Glove extenders;
- Face shield;
- Appropriate boot or shoe covers;
- An eyewash station;
- A suitable and unrestricted wash area in the event of inadvertent exposure.

1. **Paint Removal** - A caustic stripping agent may require multiple applications, depending on a variety of circumstances. When this type of material is used, care should be taken to avoid drying of the agent. It may become necessary to lightly mist over area with water to keep it moist. Surfaces that come in contact with the stripping agents used in this methodology during washing or neutralizing shall be completely cleaned before the waste dries.

   a. Each worker, in order to be allowed in the work area, must have received specific instructions on the procedures to remove material that inadvertently comes in contact with skin, and eyewashing procedures, together with information on the nature of the danger. This can be accomplished by general safety meetings that are regularly scheduled and with a "right-to-know" booklet that is in a location that is known to all persons and is readily accessible.

   b. In addition to standardized work area preparation, to protect surrounding areas, polyethylene sheeting shall be placed flush to the surrounding walls for a firm seal to avoid leakage of waste below the polyethylene sheeting, and the joint shall be caulked. The Abatement Subcontractor may place absorbent pads or material below the surface being abated and/or place waterproof duct tape on the surface adjacent to that being abated, to prevent damage to the adjacent wall or floor surface. The Abatement Subcontractor is responsible for repairing any adjacent surfaces harmed by the chemical removal process. This includes contamination of these surfaces by chemical residue.

   c. A dwell time may be a specified by the manufacturer. The Subcontractor shall run a series of test patches to determine the optimal amount of time for the chemical to work on a particular component.

   d. Removal of the caustic stripping agent after dwell time shall be performed by scraping the waste off the substrate onto the paper, using a metal scraper. Application process shall be repeated if, in the opinion of the Consultant, complete removal of the paint is not attained. At no time shall dry scraping be used.

   e. Once removal of paint from the abated surface is complete, clean-up procedures shall then follow and include wash-down of the surface and neutralization.

   f. Once the neutralizing process is complete, the surface shall undergo normal clean-up
procedures of HEPA vacuuming, wet wash and repeated HEPA vacuuming.

g. All worker protection equipment as specified shall be left within the work area during all phases of the work. This equipment may be transferred between work areas using double six (6) mil polyethylene bags to prevent contamination of clean areas.

h. All accumulated debris resulting from removal of caustic paste shall be treated as hazardous and shall be properly stored and disposed of according to EPA, DOT, and all other applicable federal, state, and local regulations.

i. Any wood flooring contaminated by the absorption of lead caustic shall be replaced by the Abatement Subcontractor at his/her expense.

B. Application and Removal

1. Spray or hand trowel paste according to manufacturer’s specifications (no less than ¼" thick). The caustic stripping agent should be applied with recommended special spray equipment approved by the manufacturer to ensure proper application of product, if spray application is used.

a. During spray application no more than two workers (one person applying and one helper) shall be allowed in the work area. Security of work area is absolutely essential.

2. Never remove material with personnel below, or in a manner that would allow caustic to fall on, splatter or contact personnel in the vicinity of the removal.

   - Minimize the fall distance of the paste/paint.

3. Work area shall be properly heated so as to meet temperature requirements outlined in the manufacturer’s specifications. Heating procedures shall be subject to the approval of the Consultant and Owner, and shall be supplied by the G.C.

4. Abatement Subcontractor shall make certain that during the application, dwell time and removal of caustic paste, the work area is secured.

C. Clean Up

1. Collect caustic paste cloth with paste/paint along with remaining residue and put into six (6) mil polyethylene bags and dispose of in compliance with all regulations and specifications.

2. Spray surface lightly with water spray. Then with a nylon scrub brush, agitate surface to loosen all residue. Thoroughly scrub surface, being sure to get all crevices, grooves, cracks, etc.

3. Lightly spray clean water on surface, removing remaining residue. The use of a wet vacuum to assist in the clean-up is suggested. Make certain that entire surface is clean of any paint/paste residue.
4. Treat residue (paste, paper, water, etc.) as hazardous waste until results of TCLP tests are available. Disposal will be dependent upon these results.

D. Neutralization

1. Apply caustic stripping agent neutralizer in accordance with manufacturer’s recommendations. Wash neutralizer off with clean water, per manufacturer’s recommendations.

2. Apply second application of caustic stripping agent neutralizer if needed and allow to dry. After one to three (1-3) hours, wash neutralizer off with clean water and allow surface to dry completely.

3. Abatement Subcontractor should use pH paper to determine if neutralization is adequate. A dry surface showing a pH of between 6 and 8 after the proper drying out period, is ready to be recoated. A pH over 8 should be treated to another application of neutralizer and left to dry before retesting. It is most important that the surface properly dry out before recoating.

3.7.4 Caustic Paint Specific Component Substrate

A. The following shall be used as a guide by which certain specific components/substrates will be abated through the use of caustic pastes. Any specific component/substrate not herein mentioned, but so identified and designated, shall be abated according to manufacturer’s recommendations. The exact locations of specific surfaces to be abated by this method are listed in Section 3.0.

1. Removal of Paint from Bulkheads. Paint shall be removed from all bulkheads in place. Special care must be taken to remove all paint from hinge mortises and frame to wall joints. A prefabricated plastic or metal drip pan may be placed on the floor at the junction of the bulkhead frame on top of any protective polyethylene sheeting. Drip pans may be placed at all sides of the bulkhead frame and abut the frame to create a seal to prevent leakage of the caustic paste below the work area seal. The drip pan shall be large enough to contain all leakage.

2. Removal of Paint from Round Vents

(a) Paint shall be removed from round vents as identified in Section 3.0. All paint shall be removed from entire surface on both sides.

3. Removal of Paint from Stair Railings System

(a) Paint shall be removed from railings, posts, guards, balusters, and all other metal stair surfaces.

(b) Paint shall be removed from the underside of flat surfaces of the railings, guards, or other surfaces.

(c) Great care shall be taken to prevent caustic paste from leaching into concrete landings utilizing work practices previously described.
Appendix 7.3

(d) Each railing system shall be prepared for abatement by sealing off dwelling unit entrance doors. Waterproof tape shall be applied to every door at all seams. Each door shall then be covered with two layers of six-mil polyethylene sheeting and sealed to the door frames to create an airtight seal.

4. Removal of Paint from Window, Door, Vent, and Canopy Flashing, and Lintels

(a) Paint shall be removed from all visible metal surfaces of the window/door flashing and lintels as identified in Section 3.0.

(b) Caustic remover shall not come in contact with anodized aluminum windows.

(c) Work shall be performed only when weather conditions permit.

(d) If chemical is left on overnight, a barrier tape shall be erected and maintained until the chemical is removed.

3.8 DAILY CLEANUP

At the completion of each workday, the Abatement Subcontractor shall clean the inside of the work area. At a minimum, the following procedures shall be adhered to:

3.8.1 Cleaning

A. End of Day Cleaning. Thirty (30) minutes or more if necessary prior to the end of each work day, the lead work area must be cleaned of all debris. Under no circumstances will lead clean-up be permitted when active lead paint abatement work is proceeding. All abatement activity must cease during the cleanup period.

Such cleaning shall include a thorough HEPA vacuuming of all affected surfaces, as determined by the Consultant. Additionally, cleaning requires the use of a solution of five percent tri-sodium phosphate (TSP) or other equally effective cleaning agent. All waste materials generated during this daily clean-up shall be disposed of as hazardous waste, unless analytical testing proves otherwise.

B. Equipment Cleaning. Durable equipment, such as power and hand tools, generators, and vehicles shall be cleaned at least monthly or prior to removal from buildings undergoing abatement or the site. All equipment shall be cleaned by HEPA vacuuming and high-phosphate (tri-sodium phosphate) washing (or use of an equivalent cleaner).

1. High Efficiency Particulate Air (HEPA) vacuum: The Abatement Subcontractor will obtain training in the use of the HEPA vacuum from the manufacturer prior to use and submit evidence of this training to the Owner and Consultant. The Abatement Subcontractor shall obtain HEPA vacuum attachments, such as various size brushes, crevice tools, and angular tools to be used for varied applications and service the HEPA vacuum routinely to assure proper operation. Caution shall be used any time the HEPA is opened for filter replacement or debris removal. Operators shall wear a full set of protective clothing and equipment, including respirators, when using and emptying the HEPA vacuuming equipment.
C. Preliminary Clean-Up. Upon completion of the lead paint abatement and a satisfactory visual inspection by the Owner/Consultant in a given work area, a preliminary clean-up shall be performed by the Abatement Subcontractor. This clean-up includes removal of any contaminated material, equipment or debris including polyethylene sheeting from the work area, except for critical barriers. The polyethylene sheeting shall first be sprayed or misted with water for dust control, the resulting abatement debris removed, then the sheeting shall be folded in upon itself. All polyethylene sheeting used for critical barriers shall remain in place until final clearance testing results have passed the clearance criteria set forth herein.

1. Large Debris. Large debris from demolition (i.e. doors, windows, baseboards) shall be wrapped in polyethylene sheeting at least six-mil thick, sealed with heavy duty duct tape, and stored until proper disposal.

2. Small Debris. Prior to picking up or collecting small debris, the surfaces of this debris will be sprayed with a fine mist of water. The debris will be picked up, collected and placed into a single plastic bag, at least six-mils thick. The bags shall not be overloaded, shall be securely sealed, and shall be stored in the designated area until disposal. Dry sweeping is not permitted in the work area; wet sweeping will require approval by the Consultant.

3. Sheeting. Removal of surface six-mil polyethylene sheeting shall begin from upper levels, such as on cabinets, counters or shelves. Removal of floor polyethylene sheeting shall begin at the corners and folded into the middle to contain the dust or residue. All collected polyethylene sheeting shall be placed in six-mil polyethylene bags for proper disposal as described in this Specification.

4. HEPA Vacuuming. Once the six-mil polyethylene sheeting is removed from the work area, cleaning shall begin with a thorough HEPA vacuuming of all surfaces, starting at the ceilings, proceeding down the walls and including window, doors and door trim and floor. The floor shall be vacuumed last, beginning at the farthest corners from the entrance to the work area. HEPA vacuuming shall again be performed as noted above, after the following TSP wash.

5. TSP Wash. Abatement Subcontractor shall next wash or mop the same surfaces with a tri-sodium phosphate (TSP) detergent solution (five percent) or other equally effective cleaning agent and allow surfaces to dry. Then a second HEPA Vacuuming of the surfaces will be performed by the Abatement Subcontractor, as described above. By the conclusion of the cleaning phase, all visible dust and debris shall have been completely removed.

6. Hygiene, Cleaning Equipment and Supplies. Special attention shall be given to personal hygiene and the cleaning of supplies and/or equipment. All mop heads, sponges and rags shall be replaced or changed daily, at a minimum. Rags, mop heads or sponges may be reused if Abatement Subcontractor has them cleaned via a washing system specially equipped with HEPA filtration.
7. Detergents. The Abatement Subcontractor shall prepare and use detergents containing five to ten percent TSP according to the manufacturer’s instructions. The manufacturer’s recommended coverage will be followed. The waste water from clean up shall be contained and disposed of according to all applicable Federal, state, county and local regulations and guidelines. In no instance shall waste water be disposed in storm sewers (e.g., yard inlet or street drain) or sanitary sewers (e.g., toilet, sink, or any other household/residential/commercial type drain system) without specific governmental approval.

3.9 VISUAL INSPECTIONS

The Abatement Subcontractor shall request a visual inspection by the Owner or Consultant. If the area does not pass a visual inspection (e.g., no visible dust or debris), the Abatement Subcontractor shall reclean the area as outlined in Steps 4, 5, 6, and 7 in Section 3.8(c).

3.9.1 Post-abatement Visual Inspection. The Consultant shall confirm job completeness by determining whether all surfaces have been abated according to the approved abatement plan and project specification. The Consultant will then determine if the building has been adequately cleaned by examining all surfaces for dust and debris. If dust is found, the work area should be recleaned, and the damp cloth test repeated.

3.9.2 Post-abatement Clearance. When all surfaces have passed visual inspection, wipe samples as detailed in Section 3.8.4 (1) shall be performed by the Consultant. The standards for passing a wipe test are outlined in Section 3.8.4 (2). Should laboratory results indicate that the wipe test clearance level is exceeded, the Abatement Subcontractor shall re-clean the affected area, at no additional cost to the Owner, utilizing the methods specified above. Retesting will then be performed to verify compliance with the mandated levels. Abatement Subcontractor shall pay for all additional testing and provide, at no additional cost, a recleaning of an affected area and personal belongings until the clearance level is achieved.

3.9.3 Finish Coatings. Finished coatings including, but not limited to, stains, primer, sealers and polyurethane coatings, if used, shall only be applied upon approval by the Owner/Consultant. Any surface requiring painting shall be primed with an approved primer. All primers or finish coating materials shall have labeling stating, in equal or appropriate wording, "does not contain lead-based paint greater than 600 parts per million" (0.06%) and "does not contain mercury." In lieu of label wording, a manufacturer’s statement to this effect may be substituted.

3.9.4 Inspection/Clearance Standards. When clean-up has been completed and all surfaces have been final cleaned, wipe samples by the Consultant or Industrial Hygienist will be performed. The following standards must be met for all "clearance" requirements:

3.9.4.1 Wipe Tests

When only some component types are to be sampled in a specific area, the Consultant will ensure that the component types to be sampled are randomly selected. Within an area, the specific components to be sampled shall be selected at random and the specific sample location on a large component shall be selected at random.
In order to compare results with applicable federal clearance criteria, the following methods must be used.

A. The sampling location (a specific surface area) must be selected, and the surface area of that location carefully measured and recorded.

B. The wipe sampling procedure must ensure that a very high percentage of the surface dust present on the sample location is captured on the wipe.

C. Wipe sample collection criteria for abatement shall be as follows:
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Step-by-Step Summary

Clearance: How To Do It

1. Decide who will conduct clearance. Clearance on all abatement projects and federally funded interim control work must be done by a certified risk assessor or inspector technician. The U.S. Department of Housing and Urban Development (HUD) strongly recommends the use of a certified risk assessor or inspector technician who is completely independent of the lead hazard control contractor to eliminate conflicts of interest. Some local jurisdictions may require a license to conduct clearance.

2. Finish the lead hazard control and cleanup effort. Seal floors before clearance testing (if necessary).

3. Wait 1 hour to allow any airborne dust to settle. Do not enter the room during that hour.

4. Conduct visual examination.
   a. Determine if all required work has been completed and all lead-based paint hazards have been controlled.
   b. Determine if there is visible settled dust, paint chips, or debris in the interior or around the exterior.

5. Complete the Visual Clearance Form contained in this chapter; if all specified work was not completed, inform the owner and order completion of work and repeated cleanup, if necessary.

6. Conduct clearance dust sampling of floors, interior window sills, and window troughs using the protocol in this chapter.

7. Conduct clearance soil sampling if bare soil is present that was not sampled previously, or if exterior paint work was completed as part of the lead hazard control effort.

8. Complete the Dust and Soil Sampling Clearance Form contained in this chapter.

9. Submit samples to an Environmental Protection Agency (EPA) recognized laboratory participating in the National Lead Laboratory Accreditation Program for analysis.

10. Interpret results by comparing them to the HUD Interim Clearance Standards contained in this chapter (until EPA issues its health-based leaded dust standards).

11. If clearance is achieved, go to step 15.

12. Order repeated cleaning if results are above applicable standards. Clean all surfaces the sample represents. If both window and floor samples fail, the entire unit must be recleaned.

13. Continue sampling and repeated cleaning until the dwelling achieves compliance with all clearance standards.
Step-by-Step Summary (continued)

14. Complete any related construction work that does not disturb a surface with lead-based paint (all work that does disturb painted surfaces or that could generate leaded dust should be completed as part of the lead hazard control effort).

15. Issue any necessary certificates of lead-based paint compliance or releases and maintain appropriate records.

16. Permit residents into the cleared work area.

Clearance criteria shall be as follows:

<table>
<thead>
<tr>
<th>Surface</th>
<th>Leaded Dust Loading (µg/ft²) (micrograms per square foot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wipe Only</td>
<td></td>
</tr>
<tr>
<td>Floors</td>
<td>100</td>
</tr>
<tr>
<td>Interior Window Sills (Stools)</td>
<td>500</td>
</tr>
<tr>
<td>Window Troughs</td>
<td>800</td>
</tr>
<tr>
<td>Exterior Concrete Or Other Rough Surfaces</td>
<td>800</td>
</tr>
</tbody>
</table>

3.9.4.3 Retests. Should laboratory results indicate that the wipe test clearance level is exceeded, the Abatement Subcontractor shall reclean the affected area, at no additional cost to the Owner, utilizing the methods specified above. Retesting will then be performed to verify compliance with the mandated levels. Abatement Subcontractor shall pay for all additional testing and provide, at no additional cost, a recleaning of an affected area until the clearance level is achieved.

3.9.5 Inspections. In addition to various daily inspections of the lead work area and abatement practices, the Consultant will make four (4) mandatory inspections during the work, one during each phase of removal. Each inspection must be requested by the Abatement Subcontractor to be performed by the Consultant to the Consultant’s satisfaction before work may begin for next phase of work, or an area accepted. Failure on the part of the Abatement Subcontractor to obtain the Consultant’s approval before proceeding to the next scheduled phase is regarded as a violation of this section. In the event of this occurring, Consultant will request work be stopped and Owner will be contacted to intervene. The four (4) inspections are as follows:

1. Window and Door Barrier Completion. Abatement Subcontractor shall have all pre-abatement preparations of the work area complete, as described in Sections 3.1.
2. **Post Removal Inspection.** Abatement Subcontractor shall have completed abatement and final clean-up of all visible debris and perform final cleaning techniques of TSP washing and HEPA vacuuming as described in Section 3.8.

3. **Daily Clean-up.** Abatement Subcontractor shall have completed daily cleanup as defined in Section 3.7.

4. **Final Clearance.** Consultant will perform final clearance wipe testing 24 hours after final clean-up activities are completed as described in Section 3.9.

3.9.6 **Air Sampling Procedure**

Air sampling shall be conducted by the Consultant. Samples shall be collected and analyzed for total airborne lead. Air sampling will be collected during, but not limited to, the pre-abatement and post-abatement periods.

A. **Sampling Apparatus.** Air Sampling shall be collected utilizing a closed-face, 37 millimeter cassette. A mixed cellulose ester filter with 0.8 micrometer pore size with a cellulose support pad shall be placed in the cassette. Air sampling pumps shall be calibrated at 2.0 liters per minute prior to sampling. All pumps shall be post calibrated.

B. **Analytical Method.** The NIOSH 7082 (AAS) procedure shall be used for sample analysis. A blank filter shall be submitted with each set of samples.

3.9.7 **Data Reporting for Lead in Air**

Laboratory results for air samples shall be provided in micrograms of lead per cubic meter of air.

Information specific to obtaining the air samples should be listed on a separate data form for air samples, which would include the following:

A. Location where sample was taken
B. Length of time in use
C. Approximate volume of air sampled
D. Abatement/clearance status
E. Abatement method (e.g., removal vs. enclosure)

3.9.8 **Analytical Laboratory Qualifications**

Analytical laboratories must be recognized by the EPA as participating in the National Lead Laboratory Accreditation Program (NLLAP). The Laboratory must show evidence that it is proficient in lead analysis under the Environmental Lead Proficiency Analytical Testing Program. If the laboratory is not currently enrolled in these programs, the laboratory will be required to enroll in the next round of ELPAT samples. The laboratory must be accredited within a one year period by an organization recognized by NLLAP that has signed a Memorandum of Understanding with EPA. Currently, the American Industrial Hygiene Association (703-849-8888) and the American Association for Laboratory Accreditation (301-670-1377) have signed such memoranda of understanding with EPA.
1. All dust, paint, and soil samples shall be analyzed for total lead, not "bioavailable" lead, as required in the HUD Guidelines for Evaluation and Control of Lead-Based Paint in Housing.

2. The following procedure (or equivalent) shall be employed for the analysis of the wipe samples:

Remove and unfold the wipe from the shipment container. Cut the wipe into small pieces and place in a 125 ml Phillips beaker. Quantitatively rinse the shipment container into the Phillips beaker. Cover the wipe with 10 ml of distilled water. Add 2 ml of concentrated HNO3 and 2 ml of HCl. Gently heat for 20-30 minutes under reflux. Cool and transfer both the liquid and the bulk material left to a 50 ml volumetric flask. If there is too much bulk material left over, rinse with distilled water and squeeze with a glass rod. Add distilled water to make up to final volume. Prior to analysis by AA or ICP, an aliquot is filtered through ashless filter paper, then centrifuged at 9K rpm for 20 minutes. The supernatant liquid is drawn off and analyzed.

3.9.9 Qualifications of Sampling Personnel

All personnel conducting environmental sampling for this project should be certified as a lead-based paint inspector, risk assessor, or inspector technician or equivalent by the Environmental Protection Agency or the appropriate state agency, or be under the supervision of such a person. Certified Industrial Hygienists are not required to have additional certification as a lead-based paint inspector.

3.10 DISPOSAL OF WASTE MATERIAL

3.10.1 Caution Note for Contractors:

All materials, whether hazardous or non-hazardous, shall be disposed of in accordance with all laws and the provisions of this Section and any or all applicable federal, state, county, or local regulations and guidelines. It shall be the sole responsibility of the Qualified Abatement Subcontractor to assure compliance with all laws and regulations relating to this disposal. Until analytical results are available, all waste materials (including water) shall be segregated and treated as hazardous.

A. Applicability. Initial TCLP results have been used to classify waste into six categories. The categories are defined by the substrate type and the amount of the six toxic metals regulated by RCRA and most commonly found in paint.

B. Waste Segregation - The Abatement Subcontractor shall be responsible for segregating waste in accordance with the previously defined six categories. Separate waste dumpsters shall be used for each of the six categories. Prior to disposal of each dumpster of waste, a representative sample will be collected by the on-site inspector, paid for by the abatement Subcontractor and analyzed by TCLP for the RCRA metals. The result of each TCLP analysis will dictate the disposal requirement for each dumpster. Unit prices listed in Section xxx shall be utilized to compensate for additional disposal cost associated with disposing of materials as hazardous waste.
C. Component Classification - The initial TCLP results have been used to establish the following waste segregation categories: For bidding purposes Categories I and IV shall be considered construction waste. Categories II, III, V, and VI shall be considered hazardous waste.

Wood Substrates

a. **Category I**
   - Residential windows without putty
   - Corner boards
   - Basement window sills
   - Wood Gutter
   - Thresholds

b. **Category II**
   - Attic Vent
   - Entrance door jamb
   - Entrance door header
   - Wood shingle
   - Entrance door casing
   - Canopy components
   - Trellis
   - Clapboard siding
   - Toeboards
   - Basement window with putty
   - Residence window with putty
   - Basement window without putty
   - Caulks and Sealant

c. **Category III**
   - Entrance door
   - All exterior trim
   - Soffit
   - Metal Substrates

d. **Category IV**
   - no components listed

e. **Category V**
   - Electrical Conduit
   - Metal flashing
   - Miscellaneous metals i.e., hooks, brackets

f. **Category VI**
   - Copper downspouts
D. Disposal Requirements. The Abatement Subcontractor shall contact the Regional EPA, state, local, and all other pertinent authorities to determine lead-based paint debris disposal requirements. If applicable, the requirements of the Resource Conservation and Recovery Act (RCRA) must be complied with, as well as any or all other applicable federal, state, county, or local waste requirements.

The Owner/Consultant will supply the Abatement Subcontractor with a list of some of the appropriate agencies. During or after the actual abatement, the Abatement Subcontractor shall not leave any debris in the yard or near-by property, incinerate debris, dump debris by the road, place debris in any unauthorized dumpster, or introduce lead contaminated (non-filtered) water into storm sewers (shall not be poured down yard inlet or street drain) or sanitary sewers (shall not be flushed down toilet or any other household/residential/commercial type drain system). All waste water shall be labeled "filtered" (using 5 micron filter) or "non-filtered." All non-filtered waste water containers shall be labeled "hazardous waste" and with a date the Abatement Subcontractor began to collect contaminated water in that container.

E. EPA ID Numbers. The Abatement Subcontractor shall apply for an EPA identification number from the appropriate office; if more than 100 kg of hazardous waste will be generated from the abatement process during any calendar month. If less than 100 kg is to be generated, the Abatement Subcontractor shall obtain a Small Quantity Generator RCRA Hazardous Material ID number. The Consultant will assist the chosen Abatement Subcontractor in contacting the appropriate office to secure the identification number. The Abatement Subcontractor also has the responsibility to coordinate this action through the State and secure any additional number as required.

The following testing must be performed by a laboratory properly certified by the State of State. The name of the laboratory must be supplied to the Owner/Consultant prior to the initiation of the testing.

F. TCLP Test. Testing on lead-based paint abatement waste materials by use of the Toxicity Characteristic Leaching Procedure (TCLP) will be completed and paid by the Abatement Subcontractor, and results shall be supplied to the Consultant and Owner. Testing results on most building components have been performed by the Consultant and are attached to this contract specification.

G. Testing of Materials. The testing of material shall be performed as obtained to minimize the storage of "assumed" hazardous material. In absence of written official state guidance, the Abatement Subcontractor shall take at least one (1) composite sample of the items listed below for the RCRA eight (8) heavy metals. The Abatement Subcontractor shall also determine if additional testing for other compounds, such as pH, flashpoint, etc., are required for disposal at a particular landfill. The following materials shall be tested to determine whether or not they are hazardous:

1. Waste water.
2. Dust from HEPA filters.
3. Metals that have not been previously tested.
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4. Plastic sheets, duct tape, or tape used to cover floors and other services during the lead-based paint removal.
5. Solvents and caustics used during the stripping process.
6. Liquid waste, such as wash water used to decontaminate wood after solvents have been used, and liquid waste from exterior (or interior) water blasting.
7. Rags, sponges, mops, scrapers, and other materials used for testing, abatement, and clean-up.
8. Disposable work clothes and respirator filters cartridges.
9. Any other items contaminated with lead-based paint or items produced as a result of lead-based paint abatement activity, such as the water filters.

H. Storage Requirements. Any item found to be hazardous, by way of testing, shall be kept in a secured area or lockable container that is inaccessible to all persons other than abatement personnel. All hazardous waste shall be labeled "Hazardous Waste - Contains Lead" and a date that the Abatement Subcontractor began to collect waste in that container. All hazardous and non-hazardous waste shall be kept in totally and completely separate containers. Until TCLP testing proves an item to be non-hazardous, all items shall be considered hazardous and stored in a secured area or lockable container.

I. Regulations. The Abatement Subcontractor will be required to comply with the Resource Conservation and Recovery Act (RCRA) and/or any other applicable state, county law, regulation and/or guidelines, whichever is most stringent.

J. Waste Transportation. If the Abatement Subcontractor is not a RCRA/DOT/EPA certified Hazardous Waste Transporter, a contract shall be entered into with a certified transporter to move the waste. The Abatement Subcontractor shall require the certified hazardous waste transport firm to follow RCRA, DOT, EPA, and any/all other applicable regulations. Many transporters are also capable of supplying pertinent information and services applicable to necessary rules, regulations, and specifications. The certified transporter/hauler shall submit for Owner/Consultant approved their qualifications to perform the work as specified herein. The Abatement Subcontractor shall be responsible for all actions of the waste hauler as pertaining to waste removal and disposal under this Section and all EPA, DOT, and other applicable regulations.

K. Waste Containers. The Abatement Subcontractor will comply with EPA and DOT regulations for waste containers. The Abatement Subcontractor shall contact the state and local authorities to determine their criteria for containers. In the case of any conflict in regulations, the more stringent regulation shall apply.
L. **Emergencies.** Abatement Subcontractors shall: contact local fire, police, hospitals or local emergency response teams and inform them of the type of hazardous waste activity and ask for assistance in the event of an accident; keep and properly maintain a suitable fire extinguisher(s) on site; have an immediate means of communication with a regulatory agency in the event of an emergency; keep a list of phone numbers of regulatory agencies on site, make sure all employees know how to deal with all types of accidents; make one person who is always on site, when the site is occupied, the emergency coordinator to ensure that emergency procedures are carried out in the event an emergency arises; and keep and maintain a "right to know" manual that is in an easily accessible location and in an area that is known to all employees.

M. **Disposal Packaging.** The Abatement Subcontractor shall place lead-based paint fragments and debris produced as a result of any abatement activity and lead dust in six-mil polyethylene (plastic) bags that are air-tight and puncture-resistant.

1. **Cleaning Materials.** The Abatement Subcontractor will place all disposable cleaning materials such as sponges, mop heads, filters, disposable clothing, and brooms in six-mil plastic bags. If after testing, those materials are determined to be hazardous, the bags will be sealed, labelled, and considered hazardous waste.

2. **Contaminated Debris.** In particular, the Abatement Subcontractor shall separate, label, and containerize the following:
   a. All paint or paint fragments removed by chemical strippers, surface preparation, or by any abatement methodology;
   b. Grossly contaminated body suits;
   c. HEPA vacuum contents, filters, and respirator cartridges: paint chips or other abatement debris on plastic should always be HEPA vacuumed prior to picking up the plastic.
   d. All hazardous wastes or materials should be kept totally separate from non-hazardous materials.

3. **Polyethylene Sheeting.** The Abatement Subcontractor shall clean surfaces and equipment and containerize large debris. Prior to removing any six (6) mil polyethylene sheeting, the Abatement Subcontractor shall lightly mist the sheeting in order to keep dust down and remove and containerize any debris and fold six (6) mil polyethylene sheeting inward to contain debris and to form tight bundles to containerize for disposal. The Abatement Subcontractor shall place all plastic sheeting in six (6) mil thick polyethylene bags and seal.

N. **Removing and Transporting Waste**

1. **Vehicles.** The Abatement Subcontractor shall ensure that all non-hazardous waste is transported in covered vehicles to a landfill, or lined landfill, if required.

2. **Container Handling.** The Abatement Subcontractor shall carefully place the containers into the truck or dumpster used for disposal. At NO time will debris or containers be thrown or dropped.
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3. **Dust or Debris.** If the Abatement Subcontractor subcontracts the removing of the non-hazardous lead-based paint abatement waste, the Contractor shall ensure that the company removing the waste material adequately covers all loads so as to assure that no dust or debris is released.

4. **Liquid Wastes.** The Abatement Subcontractor shall contain and properly dispose of all liquid waste, including lead-contaminated wash water if not filtered and drained.

5. **Containers.** The Abatement Subcontractor shall HEPA vacuum the exterior of all waste containers prior to removing the waste containers from the work area and shall wet wipe the containers to ensure that there is no residual contamination. Containers should then be moved out of the work area into the designated storage area.

6. **Solvents.** The Abatement Subcontractor shall place solvent residues and residues from strippers in drums made out of materials that cannot be dissolved or corroded by chemicals. Solvents will be tested by the Abatement Subcontractor to determine if they are hazardous. Solvents, caustic, and acid waste must be segregated and not stored in the same containers.

3.10.2 **Soil Sampling Procedure**

A. **Pre-abatement Soil Sampling.** In order to establish baseline lead-in-soil conditions on the site prior to the initiation of exterior lead abatement, soil samples will be collected.

3.10.3 **Post-abatement Soil Sampling**

A. Post-abatement soil samples, will be collected at the same building where pre-abatement soils samples were collected.

B. If pre-abatement soil samples at any of the ten building locations exceed 1,000 µg/g, the Contractor may be required to perform soil excavation and removal at additional cost as specified in Section 3.10.4.

C. If pre-abatement soil samples are at or below 1,000 µg/g, and post-abatement soil samples exceed 1,000 µg/g, the Contractor will be required to perform soil excavation and removal at no additional cost as specified in Section 3.10.4 under Section 3.11 Damages.

3.10.4 **Excavation and Removal of Contaminated Soil**

A. Careful excavation will begin with equipment, such as an excavator or backhoe. Work will continue with hand tools as directed by the Consultant. Careful handling of soil with hand tools shall be employed in order to avoid damaging the structure and to minimize waste generation.

B. Excavation to a depth of two (2) inches will take place within the area identified by the Consultant.

C. Excavation will be performed with care to protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by equipment, contaminated soil, and other hazards created by operations.
D. Excavated soils will be placed in a pre-designated area on six (6) mil polyethylene roll sheeting and covered with the same material.

E. Proper protective measures will be taken to prevent human exposure to excavated soils. Protective measures shall include installation of construction fencing around excavated soil and staking or weighting polyethylene sheeting to prevent wind or precipitation damage.

F. Careful removal of contaminated soil will begin with equipment, such as an excavator or pay loader. Work will continue until all contaminated soil is removed from the area outlined on the site plan to the specified depth.

G. Appropriate worker protection practices shall be followed as specified in OSHA Regulations.

3.10.5 Laboratory Testing for Lead in Soil

Pre-abatement and post-abatement soil lead analysis will be performed. EPA protocols for soil sampling will be followed.

3.11 DAMAGES

The Abatement Subcontractor shall protect remaining surfaces such as drywall, paneling, plaster, glass, and the property soil, etc., from damage. Damages to non-protected remaining surfaces shall be repaired at the Abatement Subcontractor’s expense. Random background soil samples will have been obtained by the Consultant. Results will be supplied without specifying their location. The Abatement Subcontractor is responsible for damages if the property soil becomes further contaminated. Reference is made to Section 3.10.1 and 3.10.2.

3.12 REOCCUPANCY CRITERIA

During all stages of the exterior abatements, dwelling units will be reoccupied after final cleanup and visual inspection completed by the Consultant at the end of each work day. Two sets of post-abatement wipe samples analyzed by atomic absorption spectroscopy (AAS) will be collected for confirmatory purposes. A comparison will be made with pre-abatement wipe samples collected prior to abatement. If the two sets of results are not statistically different, occupancy shall be maintained. However, if a unit is cleared and re-occupied based on the Consultant’s visual inspection and it then fails to meet the clearance criteria based on the laboratory results, the cost of the cleaning of the occupants’ household furnishings will be borne by the Abatement Subcontractor. U.S. HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing will apply for lead wipe results.