# MASTER SPECIFICATION

For Abatement of Lead-Containing Materials

## MASTER SPECIFICATION
## FOR
## AUSTIN ENERGY

*Prepared by:*

**ERC**
ENVIRONMENTAL RESOURCE CONSULTANTS
Austin, Texas

| Date | Prepared by / | / Reviewed by | Issuance/Revision |
|---|---|---|---|
| 07/12/01 | Fernando Yepez | Linda Arredondo | Issuance |
| 12/11/06 | Linda Arredondo | | Revision |

This specification, until revised or rescinded, shall apply to each future purchase and contract for the service described herein.

## CODES AND REGULATIONS SECTION 01200

### PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

SUMMARY:
This section sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices, permits and licenses which are known to the OWNER and which either must be applied for and received, or which must be given to governmental agencies before start of work.

CODES AND REGULATIONS:

General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, applicable codes, regulations, and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.

CONTRACTOR Responsibility: The CONTRACTOR shall be responsible for compliance with applicable Federal, State, and Local regulations pertaining to the Work, including work practices, transportation and disposal of lead waste materials, protection of workers, visitors to the site, and persons occupying areas adjacent to the site.

The CONTRACTOR shall be responsible for providing medical examinations and maintaining medical records of personnel as required by applicable Federal, State, and Local regulations.

The CONTRACTOR shall hold the OWNER and CONSULTANT harmless for failure to comply with applicable regulations, including those pertaining to work practices, transportation and disposal of lead waste materials, protection of workers, visitors to the site, and persons occupying areas adjacent to the site; on the part of himself, his employees, and his authorized personnel, and will bear all costs associated therewith.

Federal Requirements: The CONTRACTOR shall abide by Federal requirements which govern lead abatement work, transportation and disposal of lead waste materials, including, but not limited to, the following:

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

Occupational Exposure to Lead
Title 29, Part 1926, Section 1025, Code of Federal Regulations (General Industry Standard)

Lead Exposure in Construction; Interim Final Rule (May 4, 1993)
Title 29, Part 1926, Section 62, Code of Federal Regulations (Construction Standard)

Occupational Exposure to Cadmium
Title 29, Part 1926, Section 63, Code of Federal Regulations

Respiratory Protection
Title 29, Part 1910, Section 134, Code of Federal Regulations

Hazard Communication
Title 29, Part 1910, Section 1200, Code of Federal Regulations
Title 29, Part 1926, Section 59, Code of Federal Regulations

Access to Employee Exposure and Medical Records
Title 29, Part 1910, Section 20, Code of Federal Regulations

Gases, Vapors, Fumes, Dusts, and Mists
Title 29, Part 1926, Section 55, Code of Federal Regulations

Ventilation
Title 29, Part 1926, Section 57, Code of Federal Regulations

U.S. Environmental Protection Agency (EPA) including but not limited to:

Hazardous Waste Management Systems
Title 40, Part 260, Code of Federal Regulations

Identification and Listing of Hazardous Waste
Title 40, Part 261, Code of Federal Regulations

Generators of Hazardous Waste
Title 40, Part 262, Code of Federal Regulations

Transporters of Hazardous Waste
Title 40, Part 263, Code of Federal Regulations

U.S. Department of Transportation (DOT) including but not limited to:

Shipping Container Specification
Title 49, Part 178, Code of Federal Regulations

Other Federal Requirements that govern lead abatement work include:

Title X - Residential Lead-Based Paint Hazard Reduction Act of 1992.
HUD-Lead-based Paint: Interim Guidelines for Hazard Identification
And Abatement in Public and Indian Housing (Sept. 1990)

State Requirements: The CONTRACTOR shall abide by State requirements which govern handling and disposal of lead-containing materials, including but not limited to requirements of the following State agencies:

Texas Natural Resource Conservation Commission
Texas Department of State Health Service

Local Requirements: The CONTRACTOR shall investigate and abide by Local requirements which govern handling and disposal of lead-containing materials.

SUBMITTALS: Before start of Work, submit the following to the CONSULTANT for review. Each of the following documents shall be current and remain current during the course of the project. If a document expires during the course of the project, Work will not be allowed to proceed until an updated document has been submitted to the CONSULTANT.

Training Certificates: Submit current, valid Contractor/Supervisor lead training certificates for every supervisor/competent person per abatement crew. Also submit current, valid lead worker training certificates for every abatement worker. Certificates shall be issued by the TDSHS or the Steel Structure Painting Council.

Written Compliance Program: Submit a written compliance program as outlined in 29 CFR 1926.62 (e)(2).

Medical Surveillance and Physician's Written Opinion: Submit a current, valid written medical exam for every person associated with lead abatement on the job site, as outlined in 29 CFR 1926.62 (j).

Respirator Fit Test: Submit a current, valid quantitative face fit test as outlined in 29 CFR 1926.62 (f). Note: Qualitative fit tests may only be performed on half-face respirators.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**---------- END OF SECTION ----------**

**SCHEDULES, REPORTS, PAYMENTS** **SECTION 01300**

## PART 1 - GENERAL

### RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

### COORDINATION:

Coordinate both the listing and timing of reports and activities required by provisions of this section and other sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals.

Make appropriate distribution of each report and updated report to parties involved in the Work including the **CONSULTANT** and **OWNER**. Provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

### SCHEDULES:
Provide proposed detailed schedule including work dates, work shift time, number of employees, dates of start and completion including dates of preparation work, removals and final inspection.

### PROGRESS MEETINGS:

General: In addition to specific coordination and other regular project meetings held for other purposes, the **CONSULTANT** will conduct general progress meetings as required, scheduled, where possible, with preparation of payment request. Require each entity then involved in planning, coordination or performance of Work to be properly represented at each meeting.

### PRE-CONSTRUCTION CONFERENCE:
The **OWNER** will schedule an initial progress meeting, recognized as "Pre-Construction Conference". Prior to start of work, meet at project site, with **CONTRACTOR**'s Superintendent, **OWNER**, **CONSULTANT**, and other entities concerned with the Work. Record discussions and agreements and provide copy to each attendee.

### REPORTING:

Daily Log: Maintain within the Decontamination Unit a Daily Log documenting the dates and time of but not limited to, the following items:

- Meetings; purpose, attendees, discussion (brief)
- Visitations; authorized and unauthorized
- Personnel, by name, social security number, entering and leaving the work area
- Air monitoring tests and test results
- Documentation of the following:
- Inspection of work area preparation prior to start of removal and daily thereafter.

- Removal of plastic sheeting barriers
- Inspection prior to final cleaning
- Removal of waste materials from work area
- Decontamination of equipment (list items)
- Final inspection/final clearance air or wipe test analysis

Provide copies of Daily Logs at Project Closeout.

SCHEDULE OF VALUES:

General: Prepare the schedule of values, as required by the General Conditions, in conjunction with the preparation of the progress schedule. Correlate preparation of schedule of values and progress schedule. Correlate line items with other administrative schedules and forms required for the work, including the progress schedule, payment request form, schedule of allowances, and schedule of alternates. Provide breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of payment requests and progress reports. Round off to nearest whole dollar, but with the total equal to Contract Sum.

Note: Mobilization cannot exceed more than 10% of total contract.

Sub-Schedules: Where the work is separated into phases which require separately phased payments to the **CONTRACTOR**, provide sub-schedules showing values correlated with each phase of payment.

Time Coordination: In coordination of initial submittals and other administrative "start up" activities, submit the schedule of values to the **CONSULTANT** at the earliest feasible date, in no case later than seven (7) days prior to initial payment request submittal.

Listing: Arrange the schedule with columns to indicate the generic name of item, related specification sections, the supplier, manufacturer or fabricator, change orders (numbers) which have affected the value, the dollar value of the item, and the percentage of the Contract Sum to the nearest one-hundredth percent and adjusted to total 100 percent.

PAYMENT REQUESTS:

General: Except as otherwise indicated, the progress payment cycle is to be regular. Each application must be consistent with previous applications and payments. Certain applications for payment, such as the initial application, the application at substantial completion, and the final payment application involve additional requirements.

Waivers of Lien: For each payment application, submit waivers of lien from every entity (including **CONTRACTOR**) who could lawfully and possibly file a lien arising out of the Contract and related to work covered by the payment. Submit partial waivers for the amount requested prior to deduction or retainage on each item. When the application shows completion of an item, submit final or full waivers. **OWNER** reserves the right to designate which entities involved in the work must submit waivers.

**CONTRACTOR shall use A.I.A. Lien Waiver.**

Waiver Delays: Each progress payment must be submitted with **CONTRACTOR**'s waiver for period of construction covered by application. At the **CONTRACTOR**'s option, each progress payment may be submitted with waivers from suppliers for the previous period of construction covered by previous application.

The final payment application must be submitted together with or preceded by final or complete waivers from every entity involved with performance of the Work covered by the payment request.

Waiver Forms: Submit waivers on forms, and executed in a manner, acceptable to **OWNER**.

Retainage: Unless otherwise stated in the Agreement, retainage on Progress Payments will be 10% of the total amount completed to date.

Payment Application Times: The "date" for each progress payment is as indicated on **OWNER-CONTRACTOR** Agreement or, if none is indicated therein, it is the 15th day of each month. The period of construction work covered by each payment request is period indicated in the Agreement or, if none is indicated therein, it is period ending 15 days prior to date for each progress payment, with the starting day following end of preceding period.

Payment Application Forms: Submit on forms, and executed in a manner, acceptable to **OWNER**.

Application Preparation: Except as otherwise indicated, complete every entry provided for on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by **CONSULTANT** without action. Entries must match current data of schedule of values and progress schedule and report. Listing must include amounts of change orders issued prior to last day of the "period of construction" covered by application.

Final Payment Application: The administrative actions and submittals which must precede or coincide with submittal of **CONTRACTOR**'s final payment application can be summarized as follows, but not necessarily by way of limitation:

- Completion of project closeout requirements.
- Transmittal of required project construction records to **CONSULTANT**.
- Packaging of waste for final delivery to disposal facility.
- Certification of completion of work: Refer to Section 1390, Page 5.

Application Transmittal: Submit executed copies of payment applications, one copy of which is completed with waivers of lien and similar attachments. Transmit each copy with a transmittal form listing those attachments, and recording appropriate information related to application in a manner acceptable to **CONSULTANT**.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

---------- **END OF SECTION** ----------

## PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DRAWINGS:
Present in clear and thorough manner.

Identify details by reference to sheet and detail numbers or room number shown on Drawings. Maximum Sheet Size: 30" x 42".

PRODUCT DATA:
Clearly mark each copy to identify pertinent products or models.

Show performance characteristics and capacities.

Show dimensions and clearances required.

Show wiring or piping diagrams and controls.

Manufacturer's standard schematic drawings and diagrams:

Modify drawings and diagrams to delete information not applicable to Work.

Supplement standard information to provide information specifically applicable to Work.

SAMPLES:
Provide sufficient size and quantity to clearly illustrate:

Functional characteristics of product, with integrally related parts and attachment devices.

Full range of color, texture and pattern.

SUBMISSION REQUIREMENTS:
Submit shop drawings, product data and samples sufficiently in advance of time returned copies are required to allow review by **CONSULTANT** and resubmittal, if required.

Submit the OSHA Material Safety Data Sheet (MSDS) for solvents, encapsulants and other chemicals to be used on the Project site.

Submittals shall contain:

Date of submission (including previous submissions).

Project title and number.

Names of **CONTRACTOR**, supplier and manufacturer.

Identification of product, with specification section number where applicable.

Field dimensions, clearly identified as such.

Relation to adjacent or critical features of work or materials.

Applicable reference standards.

Identification of deviations from requirements of Contract Documents.

Identification of revisions on resubmittals.

RESUBMISSION:
Revise submittals as required and resubmit as specified for initial submittal. Indicate any changes which have been made other than those requested by **CONSULTANT**.

**CONTRACTOR** RESPONSIBILITIES:
Schedule submittals according to general flow of Work and so as to allow for adequate and timely review of submittals by **CONSULTANT**.

Review submittals prior to submission and submit to **CONSULTANT** in accordance with provisions herein.

Verify field measurements, construction criteria, catalog numbers and similar data.

Coordinate submittals with requirements of Work and Contract Documents.

**CONTRACTOR**'s responsibility for errors or omissions is not relieved by **CONSULTANT**'s review.

**CONTRACTOR**'s responsibility for deviations from requirements of Contract Documents is not relieved by **CONSULTANT**'s review, unless **CONSULTANT** is notified of deviations in writing at time of submittal and gives written review of specific deviations.

Do not begin work which requires submittals until reviewed submittals have been received from **CONSULTANT**.

Reproduce and distribute copies after **CONSULTANT**'s review.

**CONSULTANT**'S RESPONSIBILITIES:
Review submittals within ten days or indicate in writing reasons for reviews which require additional time.

Review for conformance with design concept of project and information given in Contract Documents.

Indicate results of review and return submittals to **CONTRACTOR** for distribution.

**CONSULTANT** is not responsible for verification of field measurements, construction criteria, catalog numbers and other similar data.

Review of separate item does not constitute review of an assembly in which item functions.

DISTRIBUTION: Distribute reviewed copies to **CONTRACTOR**'s file, Project site file, and other parties as required.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

---------- **END OF SECTION** ----------

**SUBSTITUTIONS AND PRODUCT OPTIONS** **SECTION 01360**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

**CONTRACTOR**'S OPTIONS:
The **CONTRACTOR** has the option to request access to the project site for testing of product. Five (5) days written notice will be required.

Any product or procedure testing by the **CONTRACTOR will need to be finalized prior to submission of bid**.

For products specified only by reference standards, select any product meeting standard.

For products specified by naming several products or manufacturers, select any named.

For products specified by naming products, provide product specifically named.

Provide all test data relative to alternate product being regulated.

Provide MSDS sheets for all products either specified or listed as an option.

The **CONTRACTOR** will provide the above information with the bid.

SUBSTITUTIONS:
Until three (3) days prior to bid date, **CONSULTANT** will consider formal requests for substitution of products in place of those specified.

In making request for substitution, **CONTRACTOR** represents that:

He has investigated proposed substitution and determined that it is equal or superior to that specified for the intended use.

He will provide same warranty as for product or method specified.

He will coordinate installation of accepted substitution into Work, making changes as may be required to complete Work.

He waives claims for additional costs related to substitution which may subsequently become apparent.

Cost data is complete and includes related costs under Contract, excluding **CONSULTANT**'s redesign.

Substitutions will not be considered if:

They are indicated or implied on shop drawings or data submittals without formal request.

Acceptance will require substantial revision of Contract Documents.

SUBSTITUTIONS: (After Project Start)

Should the **CONTRACTOR** choose to substitute a product during a project, all tests shall be done at **CONTRACTOR'S** expense, including time and materials. No additional time will be granted to contract for test procedures. **Also, any new products substituted will be at CONTRACTOR's expense. No additional funds will be granted to contract for new products required to complete original scope of work.**

**CONTRACTOR** alone shall be responsible for substantiating acceptability of proposed substitutions.

**CONSULTANT**'s decision in acceptance or non-acceptance of substitutions will be final.

SUBMITTALS:
Submit three copies, plus copies as needed for return, of each request for substitution, including complete data substantiating compliance of proposed substitution with Contract Documents.

For products:

Product identification, including name and address of manufacturer.

Product description, performance and test data, and reference standards.

For construction methods:

Detailed description of proposed method.

Illustrative drawings.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**---------- END OF SECTION ----------**

**PRODUCT HANDLING** **SECTION 01370**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

QUALITY ASSURANCE:
Include within the **CONTRACTOR**'s quality assurance program such procedures as are required to assure full protection of Work and materials.

MANUFACTURERS' RECOMMENDATIONS:
Except as otherwise approved by the **CONSULTANT**, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

PACKAGING:
Deliver products to the Project site in manufacturer's original container, with labels intact and legible.

Maintain packaged materials with seals unbroken and labels intact until time of use.

Promptly remove damaged material and unsuitable items from the Project site, and promptly replace with material meeting the specified requirements, at no additional cost to the **OWNER**.

The **CONSULTANT** may reject as non-complying such material and products that do not bear identification satisfactory to the **CONSULTANT** as to manufacturer, grade, quality, and other pertinent information.

PROTECTION:
Protect finished surfaces, including jambs, heads and soffits of openings used as passageways, through which equipment and materials are handled.

Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

Maintain finished surfaces clean, unmarred, and suitably protected throughout Project Duration.

REPAIRS AND REPLACEMENTS:
In event of damage, promptly make replacements and repairs to the satisfaction of the **CONSULTANT** and at no additional cost to the **OWNER**.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**---------- END OF SECTION ----------**

**TEMPORARY FACILITIES** **SECTION 01380**

## PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DESCRIPTION OF REQUIREMENTS:
Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

STANDARDS:

Scaffolding: Comply with OSHA and other applicable regulations regarding the type, erection and use of scaffolding.

Electrical Service: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and installation of temporary electric service and hot water heater.

Heating Units: Temporary heating units shall have been tested and labelled by UL, FM or another recognized trade association related to the fuel being consumed.

Fire Extinguishers: Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers".

## PART 2 - PRODUCTS

GENERAL:
Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

SCAFFOLDING:
Provide scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type; or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type.

Equip rungs of metal ladders, etc. with an abrasive non-slip surface. Provide a non-skid surface on scaffold surfaces subject to foot traffic.

WATER SERVICE:

Temporary Water Service Connection: Connections to the **OWNER**'s water system shall include back flow protection.

Water connection to **OWNER**'s existing potable water system is limited to one 3/4" pipe-size connection, and a maximum flow of 10 gpm each to hot and cold water supply. Hot water shall be supplied at a minimum temperature of 100°F.

Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered.

Supply hot and cold water to the Decontamination Unit.

Maintain hose connections and outlet valves in leak proof condition.

Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pan as it accumulates.

After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grate where water will not damage existing finishes or equipment.

Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

Hot-Water Heater: Provide UL rated electric hot-water heater to supply hot water for the Decontamination Unit shower. Activate from appropriate amp circuit breaker located within the Decontamination Unit sub-panel. Provide with relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper.

ELECTRICAL SERVICE:

General: Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work throughout the Project duration. Circuits shall be adequate size and proper characteristics for each use. In general, run wiring overhead and raise vertically to where wiring will be least exposed to water and to damage from work activities. Do not wire devices with exposed, insulated electrical conductors.

Temporary Power: Provide service to sub-panel with appropriate amp, two (2) pole circuit breaker or fused disconnect sized and equipped to accommodate electrical equipment required for completion of the work.

Provide overload-protected disconnect switch for each temporary circuit located at the power distribution center.

Voltage Differences: Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for

work operations.

Ground Fault Protection: Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and power indicator light for plug-in connection or power tools and equipment.

Electrical Wiring and Power Cords: Provide in the work area type UF (Underground Feeder) sheathed cable. Use only grounded extension cords in serviceable condition (no frayed or worn cords); use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work. Provide liquid tight enclosures or boxes for wiring devices.

Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by work activities. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

Supplies for **CONSULTANT**: The **CONTRACTOR** shall provide a source of electrical power, adequate lighting, and electrical extension cords for **CONSULTANT**'s use throughout project duration.

TEMPORARY HEAT:
Use steam or hot water radiant heating units where available, and where not available use electric resistant fin radiation supplied from a branch circuit with ground fault circuit interrupter. Under no circumstances shall forced air or fan type units be utilized inside a Work Area.

Provide temporary heat where indicated or needed for performance of the Work.

Maintain a minimum temperature of 70°F where finished work has been installed.

Maintain a minimum temperature of 75°F in the shower of the Decontamination Unit.

Maintain a minimum temperature of of 70°F in the work area at all times that work is going on. At other times and at completion of removal work, but before start of reconstruction work, maintain a minimum temperature of 50°F.

SELF CONTAINED TOILETS:
Provide single-occupant self-contained toilet units of the chemical type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar non-absorbent material. Provide one self-contained chemical toilet unit in the work area for each 30 workers. These self-contained toilets shall be made available if no other agreements are made with the **OWNER**.

LCM WASTE STORAGE:
Provide a separate, lockable, fully enclosed metal container, trailer or vehicle for temporary **LCM** waste storage on site. This temporary waste storage shall be made available if no other agreements are made with the **OWNER.**

Locate temporary **LCM** waste storage unit as directed on site. Label properly in accordance with regulatory requirements. Maintain locked at all times, except during loading operations. Repair damage to landscape and site construction resulting from storage unit operations to the satisfaction of the **OWNER.**

FIRST AID:
Provide first aid supplies and trained personnel in accordance with governing regulations and recognized recommendations within the construction industry.

FIRE EXTINGUISHERS:
Provide Type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations, including inside of the containment (one per 1,000 SF of area), provide type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.

## PART 3 - EXECUTION

INSTALLATION:
Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work.

Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

SCAFFOLDING:
During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged. If damage occurs, it must be repaired immediately by appropriate means.

Clean as necessary, debris from non-slip surfaces.

At the completion of abatement work, clean construction aids within the work area, wrapping one (1) layer of 6 mil polyethylene sheet and seal before removal from the work area.

TEMPORARY LIGHTING:
Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work, if no other agreements exist between the **CONTRACTOR** and **OWNER**.

SANITARY FACILITIES:
Provide temporary self-contained toilet facilities as necessary for **CONTRACTOR**'s own use. Facilities shall be clean and shall remain maintained in a condition acceptable to the **OWNER**. At Project completion, decontaminate and remove temporary toilets and restore the area to the condition prevalent at the time of initial use.

**---------- END OF SECTION ----------**

**PROJECT CLOSEOUT** **SECTION 01390**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DESCRIPTION OF REQUIREMENTS:

Project Closeout is the term used to describe certain collective Project requirements, indicating completion of the Work, that are to be fulfilled near the end of the Contract Time in preparation for final acceptance and occupancy of the Work by the **OWNER**, as well as final payment to the **CONTRACTOR** and the normal termination of the Contract.

Specific requirements for individual units of Work are included in appropriate Sections.

Time of Project Closeout is directly related to Substantial Completion; therefore, the time of closeout may be either a single time period for the entire Work or a series of time periods for individual elements of the Work that have been certified as substantially complete at different dates. This time variation, if any, shall be applicable to the other provisions of this Section.

PREREQUISITES TO SUBSTANTIAL COMPLETION:

General: Complete the following before requesting the **CONSULTANT** to inspect for substantial completion, either for the entire Work or for portions of the Work. Include list of known exceptions.

In the progress payment request that coincides with, or is the first request following, the date substantial completion is claimed, show either 100% completion for the portion of the Work claimed as "substantially complete" or list incomplete items, the value of incomplete Work, and reasons for the Work being incomplete.

Include supporting documentation for substantial completion.

Advise **OWNER** of pending insurance change-over requirements.

Obtain and submit releases enabling **OWNER**'s full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates and similar releases.

Complete Final Cleaning requirements.

Touch-up, repair, restore and/or replace marred finishes affected by the Work when such damaged or marred finishes are in excess of anticipated results of normal abatement operations. Degree of excessive damage and necessary repair procedures will be as determined by the **CONSULTANT**.

Inspection Procedures: Upon receipt of **CONTRACTOR**'s request for inspection, the **CONSULTANT** will either proceed with inspection or advise **CONTRACTOR** of unfulfilled prerequisites.

Results of the inspection will form the "punch-list" for final acceptance.

PREREQUISITES TO FINAL ACCEPTANCE:

General: Complete the following before requesting the **CONSULTANT**'s final inspection for final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in request.

Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required. **CONTRACTOR**'s Certificate of Completion is enclosed at the end of this section.

Submit evidence of final, continuing insurance coverage complying with insurance requirements.

Re-inspection Procedure: The **CONSULTANT** will re-inspect the Work upon receipt of the **CONTRACTOR**'s notice that the Work, including punch-list items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the **CONSULTANT**. Upon completion of re-inspection, the **CONSULTANT** will either prepare final acceptance documents, or will advise the **CONTRACTOR** of Work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.

MODIFICATION OF PROCEDURES:
The **OWNER** and **CONSULTANT** may modify, waive, and/or combine procedures, submittals and requirements of the Project Documents as may be deemed in the **OWNER**'s best interest and as may be suitable to the size and scope of the Project.

PART 3 - EXECUTION

FINAL CLEANING:

General: Special cleaning requirements for specific units of Work are included in the appropriate Sections.

Cleaning: Provide Final Cleaning of the Work as indicated. Clean each surface or unit of Work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for cleaning operations.

Complete the following cleaning operations before requesting the **CONSULTANT** to inspect for certification of Substantial Completion:

Remove exposed labels in finished spaces which are not required as permanent labels on materials supplied as part of the Work.

Clean transparent materials affected by the Work, including mirrors and window/door glass, to a polished condition, removing substances which are noticeably vision-obscuring materials.

Clean hard surfaced floors affected by the Work, using materials approved by the **OWNER**.

Clean exposed hard-surfaced finishes affected by the Work to a dirt-free condition, free of dust, stains, films and similar distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces.

Restore reflective surfaces to original reflective condition prior to Work.

HEPA vacuum carpeted surfaces and similar soft surfaces affected by the Work. Professionally clean to remove staining caused by the Work.

Clean toilet areas and plumbing fixtures affected by the Work to a sanitary condition, free of stains including stains from water exposure.

Replace disposable type HVAC Filters affected by the Work using materials supplied by the **OWNER**. Clean permanent type filters after minimum of eight (8) hours of operation of HVAC equipment after Final Clearance.

Clean light fixtures and lamps which have been affected by the Work.

Clean Project site (yard and grounds), including landscaped areas, of litter and foreign substances accumulated during the course of the Work.

Sweep paved areas which have been affected by the Work to a broom-clean condition; remove stains, petrochemical spills and other foreign deposits left by the Work.

Rake unplanted grounds which have been disturbed by the Work, to a smooth, even-textured surface.

FINAL CLEARANCE WIPE SAMPLING: **LEVEL-A**

General: To determine if lead has been removed to the clearance levels indicated, the **CONSULTANT** will secure surface dust samples utilizing commercial wipes moistened with a non-alcoholic wetting agent.

In each homogeneous work area or as required by the **CONSULTANT**, one surface dust sample for each type of building component will be taken (e.g., one window sill sample, one floor sample, one wall sample, etc.). Sample quantities and analytical methodologies may vary and will be at the discretion of the **CONSULTANT**.

Release Critieria: Maximum acceptable levels of surface lead dust are stated in terms of weight (micrograms) of lead present per relevant surface area (square feet).

| | |
|---|---|
| Floors and Any Other Surfaces Not Listed Below: | 100 micrograms per square foot or current EPA standard |
| Window Sills: | 500 micrograms per square foot or current EPA standard |
| Window Wells: | 800 micrograms per square foot or current EPA standard |

RE-CLEANING:
If the results of analysis of the Work Area samples fails to meet the release criteria, Final Clearance is incomplete, re-cleaning per Section 01580 is required until release criteria is met.

**FINAL CLEARANCE VISUAL INSPECTION LEVEL-B**

General: To determine if lead has been removed visually, the **CONSULTANT** will conduct a thorough visual inspection of all abated surfaces relevant to the scope of work.

Release Criteria: Upon final visual inspection, all surfaces required for abatement have been thoroughly cleaned and no visible lead paint or primer remains, the **CONSULTANT** will notify the **CONTRACTOR** that the area being inspected is complete.

**RECLEANING:**

In the event that the results of the visual inspection(s) are unsatisfactory, a re-cleaning and re-inspection of the affected areas are required (per inspector's instructions).

## CONTRACTOR'S CERTIFICATE OF COMPLETION

TO:_____
Owner/Manager

PROJECT:_____

BUILDING NAME:_____

LOCATION WITHIN
BUILDING:_____

The Work for the above referenced Project has been completed in accordance with applicable requirements of the United States Environmental Protection Agency, the Occupational Safety and Health Administration, the National Institute for Occupational Safety and Health, and state, county, and local agencies. The Work has also been performed in accordance with the Project Manual as prepared by the **CONSULTANT**.

**CONTRACTOR**

SIGNED:_____
Authorized Contractor Representative

TITLE:_____

DATE:_____

**CONSULTANT**

SIGNED:_____
Authorized Consultant Representative

TITLE:_____

DATE:_____

**CITY REPRESENTATIVE**

SIGNED:_____
Authorized Onsite Inspector

TITLE:_____

DATE:_____

**CITY REPRESENTATIVE**

SIGNED:_____
Authorized Waste Compliance Specialist

TITLE:_____

DATE:_____

**AIR MONITORING AND INSPECTION**
**TESTING LABORATORY SERVICES** **SECTION 01400**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DESCRIPTION OF THE WORK:
This Section describes air monitoring and inspection services to be carried out by the **CONSULTANT** to verify that the Work performed is in compliance and that the building areas beyond the Work Area and the outside environment remain uncontaminated. This section also sets forth airborne lead levels both inside and outside the Work Area as action levels, and describes the action required by the **CONTRACTOR** if an action level is met or exceeded.

AIR MONITORING:

The **CONSULTANT** will be conducting air monitoring throughout the course of the Project.

Base Line Fiber Levels: The **CONSULTANT** will monitor airborne lead levels prior to start of Work. The purpose of this air monitoring will be to establish prevailing airborne lead levels prior to beginning abatement operations.

Work Area Isolation: The **CONSULTANT** will monitor airborne lead levels outside the Work Area.

The purpose of this air monitoring will be to monitor integrity of the Work Area isolation relating to, but not limited to, prevention of contamination of building areas outside of the Work Area, prevention of failure of filtration or rupture in the ventilation system, and prevention of contamination of the exterior of the building.

Should indications of failure of integrity of any of the above systems occur, the **CONTRACTOR** shall immediately cease abatement activities until the discrepancy is corrected. Work shall not recommence until authorized by the **CONSULTANT**.

Work Area Airborne Lead Levels: The **CONSULTANT** will monitor airborne lead levels inside the Work Area.

The purpose of this air monitoring will be to monitor airborne lead levels to verify appropriateness of the Work Area removal procedures and appropriateness of implemented respiratory protection.

Final Clearance: The **CONSULTANT** will conduct Final Clearance air and/or wipe sampling in accordance with the Final Clearance Section(s).

**AIRBORNE LEAD LEVELS:**

Inside Work Area: Maintain an average airborne lead level in the Work Area (outside of containment) of less than 30 micrograms per cubic meter of air (30 $\mu g/m^3$). If the lead levels rise above this figure for any sample taken, revise work procedures to lower lead levels. Maintain an airborne lead level in the Work Area (inside of

containment ) of less than 30 micrograms per cubic meter of air (30 $\mu g/m^3$) times the respiratory protection factor for respirators used, averaged over an eight hour period. If the level rises above this figure, Stop Work and leave ventilation system in operation. Revise work procedures and do not recommence Work until authorized in writing by the **CONSULTANT**.

Outside Work Area: Maintain an average airborne lead level outside the Work Area of less than or equal to Base Line as established below.

If any air sample taken outside the Work Area exceeds the Base Line, immediately and automatically stop Work until the source of the excessive readings can be determined by the **CONSULTANT**. If no outside lead source can be located by the **CONSULTANT** and if this air sample was taken inside the building and outside of Critical Barriers around the Work Area, immediately erect new Critical Barriers as set forth in Section 01500 to isolate the affected area from the balance of the building or as instructed by the **CONSULTANT**.

Erect Critical Barriers at the next existing structural isolation of the involved space (e.g., wall, ceiling, floor).

Decontaminate the affected area in accordance with Section 01510.

Respiratory protection as set forth in Section 01710 shall be worn in affected area until area is cleared for re-occupancy.

Leave Critical Barriers in place until completion of Work and insure that the operation of the reduced air pressure system in the Work Area results in a flow of air from the balance of the building into the affected area. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a new decontamination facility.

After visual inspection by the **CONSULTANT** in the extended work area, remove Critical Barriers separating the Work Area from the affected area.

Include the affected area in the Work Area and proceed with the Work.

ANALYTICAL METHODS:
One or both of the following methods will be utilized at the discretion of the **CONSULTANT** in collecting and analyzing air and wipe samples:

EPA method 3050 using graphite furnace atomic absorption spectrometry (GFAA) or EPA method 3050 using inductively coupled argon plasma emission spectrometry (ICP) will be used for analysis of:

1. **Surface lead (Pb) dust wipe samples**

2. **Air Samples** that will be collected by the Owner's Representative before and during the course of the project to establish area airborne lead (Pb) dust levels.

3. **Soil Samples** shall be collected by the Owner's Representative to establish a baseline lead (Pb) content to assess the area soil before work efforts under this contract are started. In addition, the Owner's Representative shall collect soil samples to establish a baseline lead (Pb) content to assess the area soil **after** all work efforts under this contract are completed.

**ESTABLISH BASELINE LEAD (PB) CONCENTRATION:**

**A.** Before start of work the Owner's Representative will secure the following air, dust and soil samples to establish a baseline level.

1. **Dust Samples:** Four (4) composite exterior samples; one (1) composite sample from each side of the scheduled work area.

2. **Air Samples:** One (1) sample outside and down wind of work area.

3. **Soil Samples:** Four (4) composite exterior samples, one (1) composite sample from each side of the scheduled work area.

**AIR AND SURFACE LEAD (PB) DUST MONITORING**

The purpose of the Owner's air and surface lead (Pb) dust monitoring will be to detect faults in the work area isolation which may cause contamination of the building or exterior with lead (Pb) dust.

**A.** Should any of the above occur, cease Hazard Reduction activities. Correct fault in work area isolation or work procedures at no cost to the Owner.

**AIRBORNE LEAD (PB) CONCENTRATIONS DURING REMEDIATION WORK**

The Owner may monitor airborne lead (Pb) concentrations inside and outside the work area.

**A.** **Inside Work Area:** Maintain lead (Pb) concentrations at lowest possible levels, not to exceed 50-micrograms/cubic meter. If concentrations rise above this, figure revise work procedures to lower lead (Pb) levels.

**B.** **Outside Work Area:** Maintain lead (Pb) concentrations at lowest possible levels, not to exceed baseline levels. If concentrations rise above baseline levels, stop hazard reduction work and institute corrective actions, Owners Representative will determine source of the high reading.

**SURFACE LEAD (PB) DUST CONCENTRATIONS**

**A.** **Outside Work Area:** Maintain lead (Pb) concentrations at lowest possible levels, not to exceed baseline levels. The Owner prior to the start of work will determine baseline levels. If baseline levels are exceeded, stop all hazard reduction activities, and institute corrective actions. Owner's Representative will determine source of the high reading.

**SOIL LEAD (PB) CONCENTRATIONS**

**A.** **Outside Work Area:** Maintain lead (Pb) concentrations at lowest possible levels, not to exceed baseline levels. If concentrations rise above baseline levels, institute corrective actions. Owner's Representative will determine source of the high reading.

**CORRECTIVE ACTIONS**

**A.** If the high reading above is outside work area and was result of failure of work area isolation measures, initiate the following action:

1. Erect new critical barriers as set forth in Section 01500 - Temporary Containment

2. Decontaminate affected area in accordance with Section 01510 - Pre-cleaning and Decontamination Procedures

**B.** If the high reading above is soil outside building and was result of failure of work area isolation measures, initiate the following action:

1. Remediate soil in accordance with Section 01560 - Removal of Lead Contaminated Soil at no cost to the Owner.

SAMPLE PROTOCOLS:
The number and volume of air samples taken by the **CONSULTANT** will generally be in accordance with the following schedule. Locations and methodologies may vary depending upon the analytical method and project layout used and at the discretion of the **CONSULTANT**.

SCHEDULE OF AIR SAMPLES:

Base Line Sample Schedule: The **CONSULTANT** will secure the following samples to establish Base Line Lead Dust Levels prior to start of Work.

| LOCATION SAMPLES | SAMPLE TYPE | MINIMUM NUMBER OF SAMPLES |
|---|---|---|
| Each Work Area | Air and/or Dust | 2 |
| Outside Each Work Area | Air and/or Dust | 2 |
| Outside Building | Air and/or Dust | 1 |
| Outside Building | Soil | One (1) composite with a minimum of three (3) sub-samples per applicable side of each structure |

Base Line Lead Level is an ambient air lead level expressed in micrograms per cubic meter before disturbance of LCM begins. The base line lead level will be the average of all base line samples collected inside and outside each work area.

Daily Sample Schedule (per 8-hour work period): From start of Work of Section 01500 through the Work of Section 01580, the **CONSULTANT** will take the following samples on a daily (8-hour work period) basis.

| LOCATION SAMPLED PER 8 HR SHIFT | NUMBER OF SAMPLES |
|---|---|
| Each Work Area | 2 |
| Outside Each Work Area | 1 |
| Outside Building | 1 |
| | |

| LOCATION SAMPLED PER 8 HR SHIFT | NUMBER OF SAMPLES |
|---|---|
| Each Work Area | 2 |
| Outside Each Work Area | 1 |
| Output Reduced Air Pressure System | 1 |

LABORATORY TESTING:
The **CONSULTANT** will obtain laboratory analysis of the air samples.

Daily reports to the **OWNER** by the **CONSULTANT** will include air monitoring data and pertinent information on work being conducted such as: work hours, number of workers, procedures used, contractor discrepancies and corrective measures, containment methods and construction, and amount of lead waste removed.

INSPECTIONS:
The **CONSULTANT**, in addition to providing air monitoring services, will provide full-time, on-site inspection of Work activities. Work shall not proceed without prior notice (forty-eight (48) hour minimum) to the **CONSULTANT** and in the presence of the **CONSULTANT** on the Project site.

The **CONSULTANT**'s inspections do not relieve the **CONTRACTOR** of his Contract obligations and are not designed to locate all discrepancies.

Inspections will require forty-eight (48) hours advance notice to the **CONSULTANT**.

The **CONSULTANT** will conduct the following key Project inspections and no work by the **CONTRACTOR** shall proceed beyond each inspection until discrepancies noted during the inspection have been corrected.

Prep Inspection:
The **CONSULTANT** will inspect Work Area and Containment prior to start of removal activities (gross removal). Removal operations shall not proceed until the **CONSULTANT** has completed inspection of the Work Area preparations and until discrepancies noted have been corrected.

Inspections during gross removal:
Inspection of the Work Area and Work practices will be conducted on an ongoing basis. Upon report of discrepancies, the **CONTRACTOR** shall immediately take corrective actions including discontinuing removal activities if appropriate.

Gross Removal Completion Inspection:
The **CONSULTANT** will inspect the Work Area after completion of gross removal Work including detail cleaning of substrate. Upon completion of the inspection by the **CONSULTANT** and correction of discrepancies noted, the **CONTRACTOR** shall proceed with removal of all but one layer of Containment Barriers and cleaning of the remaining layer.

Pre-final Inspection:
The **CONSULTANT** will inspect the Work Area after completion of cleaning of one layer of Containment. The **CONTRACTOR** shall correct discrepancies noted, and upon completion of corrections, the containment will be vacant for twenty-four hours.

Final Clearance Inspection:
The **CONSULTANT** will inspect the Work Area after twenty-four hours. The **CONTRACTOR** shall correct discrepancies noted, and upon completion of corrections, the **CONSULTANT** will perform Final Clearance Wipe Sampling.

Final Inspection:
The **CONSULTANT** will inspect the Project area after the **CONTRACTOR** has removed Critical Barriers, equipment, supplies, and performed final clean-up operations. Discrepancies which are not or cannot be corrected expediently will be assigned to a Project Punch List. Punch List items shall be resolved prior to Project Closeout.

Modifications: The above inspection schedule may be modified by the **CONSULTANT** to meet specific Project needs.

Failed inspections will be re-conducted and classified as re-tests.

PERSONAL MONITORING:
The **CONTRACTOR** shall perform air monitoring of his personnel as required to meet OSHA Requirements for types of respiratory protection provided. The **OWNER** will not provide air monitoring services to meet the **CONTRACTOR**'s OSHA requirements.

The **CONTRACTOR** shall post results of OSHA required air monitoring within seventy-two (72) hours of sample collection.

A copy of the personnel monitoring results shall be submitted to the Owner's Representative at least every three (3) days.

Retests and Reinspections:

Additional sample collection and inspections by the Owner's Representative, if required due to failure of the Contractor to achieve clearances, containment failure, retests, etc., will be backcharged by the Owner to the Contractor at the Owner's cost for time and testing.

Testing Outside of Project Schedule:

If the Contractor fails to achieve completion within the contract time schedule, the costs of inspections and air monitoring services will be backcharged to the Contractor by the Owner at the Owner's cost for time and testing.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

**---------- END OF SECTION ----------**

**FINAL CLEARANCE SAMPLING** **SECTION 01410**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

SAMPLING:
To determine if lead levels following abatement operations have been reduced to acceptable standards, the **CONSULTANT** will secure and obtain anaysis of air and/or wipe samples in accordance with the following procedures.

ANALYTICAL METHODS:
One or both of the following methods will be utilized at the discretion of the **CONSULTANT** in collecting and analyzing air and wipe samples:

EPA method 3050 using inductively coupled argon plasma emission spectrometry (ICP).

EPA method 3050 using graphite furnace atomic absorption spectrometry (GFAA).

NIOSH method 7082

FINAL CLEARANCE WIPE SAMPLING: **LEVEL-A**

General: To determine if lead has been removed to the clearance levels indicated, the **CONSULTANT** will secure surface dust samples utilizing commercial wipes moistened with a non-alcoholic wetting agent.

In each homogeneous work area or as required by the **CONSULTANT**, one surface dust sample for each type of building component will be taken (e.g. one window sill sample, one floor sample, one wall sample, etc.). Sample quantities and analytical methodologies may vary and will be at the discretion of the **CONSULTANT**.

Release Criteria: Maximum acceptable levels of surface lead dust are stated in terms of weight (micrograms) of lead present per relevant surface area (square feet).

| | |
|---|---|
| Floors: | 100 micrograms per square foot or current EPA standard |
| Window Sills: | 500 micrograms per square foot or current EPA standard |
| Window Wells: | 800 micrograms per square foot or current EPA standard |

RE-CLEANING: If the results of analysis of the Work Area samples fail to meet the release criteria, Final Clearance is incomplete, re-cleaning per Section 01580 is required, and re-testing is required until release criteria is met.

**FINAL CLEARANCE VISUAL INSPECTION: LEVEL-B**

General: To determine if lead has been removed visually, the **CONSULTANT** will conduct a thorough visual inspection of all abated surfaces relevant to the scope of work.

Release Criteria: Upon final visual inspection, all surfaces required for abatement have been thoroughly cleaned and no visible lead paint or primer remains, then the **CONSULTANT** will notify the **CONTRACTOR** that the area being inspected is complete.

RECLEANING:
If the results of analysis of the Work Area samples fails to meet the release criteria, Final Clearance is incomplete, re-cleaning per Section 01580 is required, and re-testing is required until release criteria is met.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

---------- **END OF SECTION** ----------

**TEMPORARY CONTAINMENT SECTION 01500**

## PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

## PART 2 - PRODUCTS

Plastic Sheeting: A single polyethylene film in the largest sheet size possible to minimize seams, 4 or 6 mils thick as indicated, translucent or opaque, as indicated.

Fire Retardant Plastic Sheeting: When working near hot equipment, in fire potential area, or otherwise required provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.

Reinforced Plastic Sheeting: Provide nylon-reinforced, laminated polyethylene film.

Spray Plastic: Provide spray plastic in aerosol cans or premixed for spray application which is formulated to adhere gently to surfaces and remove cleanly by peeling off at the completion of the Work. Use of spray plastic must be approved in advance by the **CONSULTANT**.

Adhesive Tape: Provide adhesive tape in 2" or 3" widths as indicated or required, with an adhesive which is formulated to aggressively stick to sheet polyethylene and other surfaces in a wet, humid, hot environment.

Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene, and other surfaces in a wet, humid, hot environment. Use only on surfaces not scheduled to be salvaged, or on surfaces which can be cleaned of the spray adhesive.

Window: Provide 1/4" thick, 18" x 24" minimum clear plastic window(s) to be located to provide view into each Containment Area at location as directed by the **CONSULTANT**.

Paint: Provide luminescent paint capable of adhering to sheet polyethylene in a wet, humid, hot environment.

## PART 3 - EXECUTION

SEQUENCE OF WORK:
Carry out work of this section sequentially. Complete each activity before proceeding to the next, except as may be modified by the **CONSULTANT** to meet Project conditions.

ALTERNATE METHODS OF CONTAINMENT:
Alternate methods of containing the Work Area may be submitted to the **CONSULTANT** for review in accordance with procedures set forth in Section 01360. Do not proceed with any such method(s) without prior

approval of the **CONSULTANT**.

WARNING SIGNAGE:

Provide Warning Signs meeting regulatory requirements generally reading as follows:

**DANGER**
**LEAD ABATEMENT**
**BRAIN, LIVER, KIDNEY AND BLOOD HAZARD**
**AUTHORIZED PERSONNEL ONLY**
**RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA**

AND

WARNING

LEAD WORK AREA

POISON

NO SMOKING OR EATING

AUTHORIZED PERSONNEL ONLY

The **CONTRACTOR** shall insure these signs are posted in every work area and they are illuminated and cleaned as necessary so that the legend is readily visible.

Signage shall be placed at approaches to the Work Area at such positions that personnel will have adequate time to take precautions. Post signage so as to not be in view of the general public inside or outside of the building.

Post preliminary signs in public areas reading similar to "CAUTION - CONSTRUCTION AREA - KEEP OUT".

Provide visual barriers between preliminary signs and required signage as necessary to prevent undue public view of required signage.

WORKER PROTECTION:
Provide Worker Protection per Section 01700.

RESPIRATORY PROTECTION:
Provide Respiratory Protection per Section 01710.

VENTILATION SYSTEM:
Provide Ventilation System per Section 01530.

CRITICAL BARRIERS:

Decontaminate Surfaces in areas to receive Critical Barriers with a HEPA vacuum and by wet wiping (if surface can be wet wiped) per Section 01510 prior to installation of Critical Barriers.

Completely Separate the Work Area from other portions of the building and/or the exterior with plastic sheeting, 4 mil (minimum) thickness, sealing perimeter and seams with adhesive tape and/or spray adhesive.

Individually seal ventilation openings, wall mounted fixtures, doorways, windows, and other openings into the Work Area with adhesive tape or with plastic sheeting 4 mil (minimum) thickness secured in place with adhesive tape.

Maintain seal until Work, including Final Clearance, is completed. Exercise care in sealing active lighting and other fixtures to avoid melting or burning of plastic sheeting. Provide ventilation for equipment, such as electrical transformers, as necessary.

Provide plastic sheeting barriers at least 4 mil in thickness as required to completely seal openings from the Work Area into adjacent areas. Seal the perimeter and seams of plastic sheeting barriers with adhesive tape.

PRE-CLEANING (DECONTAMINATION):

Decontaminate wall, floor and ceiling surfaces, within the Work Area with a HEPA vacuum and by wet wiping (if surface can be wet wiped) per Section 01510.

Decontaminate furniture, carpeting, fixtures, equipment, and/or supplies within the Work Area with a HEPA vacuum and by wet wiping (if surface can be wet wiped) per Section 01510, prior to being moved or covered. Decontamination of interior surfaces of enclosed cabinets, drawers, equipment, etc, is not required, unless otherwise indicated.

ACCESS TO LCM:

Remove built-in construction items, such as lighting fixtures, clocks, diffusers, registers, escutcheon plates, cabinets, casework, doors and window trim, moldings, etc., which cover surfaces involved with the Work.

Decontaminate with a HEPA vacuum and by wet wiping (if surface can be wet wiped) per Section 01510.

Reinstall removed items upon completion of Work with materials, finishes, and workmanship to match existing installations prior to start of Work to the satisfaction of the **CONSULTANT**.

CARPET:

Cover Carpeting (where occurs) with a minimum of one (1) additional layer of 6 mil plastic sheeting to protect carpeting as critical barrier if carpeting is to remain in place during Work.

DECONTAMINATION UNITS:
Provide Decontamination Units per Section 01520.

CONTAINMENT BARRIERS:

Provide Containment Barriers on surfaces which are not scheduled to be removed as **LCM.**

Provide two (2) layers of plastic sheeting Containment Barriers on floor areas to remain intact until removed.

Cover floor of Work Area with a minimum of two (2) individual layers of plastic sheeting, 6 mil (minimum) each, turned up walls at least twelve (12) inches. Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Seal seams using both spray adhesive and adhesive tape.

Locate seams in top layer at a minimum of six (6) feet from, or at right angles to, seams in bottom layer. Install plastic sheeting so that top layer can be removed independently of bottom layer.

Cover Containment Barriers in areas where scaffolding or similar equipment is to be used with protection board (plywood, hardboard, or suitable material) of sufficient thickness to protect plastic sheeting from punctures and tears. At completion of abatement work, wrap protection board with two (2) layers of 6 mil plastic sheeting and move to next Work Area, or dispose of as lead-contaminated waste materials.

Provide one (1) layer of plastic sheeting Containment Barriers on wall and ceiling areas to remain intact until removed.

Cover walls and ceilings in Work Area with a minimum of one (1) layer of plastic sheeting, 4 mil (min), supported as required to maintain barrier intact. Seal perimeters and seams, including the joining with the floor sheeting, with spray adhesive and adhesive tape.

Emergency Exits: At each existing door and opening from the Work Area, provide the following means for emergency exiting. Arrange exit door so that it is secure from outside the Work Area but permits exiting from the Work Area. Mark outline of door on Containment Barriers with luminescent paint or tape at least one inch (1") wide. Hang a razor knife suitable for cutting through the Containment Barriers on a string beside outline.

Tape or paint with luminescent paint the word "EXIT" inside the outline in letters at least six inches (6") high and one inch (1") wide.

View Windows: Provide a ¼" thick, 18" x 24" minimum clear plastic view window or windows into Containment areas to allow view to fullest extent possible. Locate as directed by the **CONSULTANT**.

Elevators: If an elevator is permitted to be used by the **CONTRACTOR**, in addition to other requirements, cover walls, floor and ceiling of elevator with two (2) layers of 6 mil plastic sheeting. Arrange entry to Work Area so that elevator door is in a positively pressurized space outside the clean room of the Decontamination Unit. At completion of the Work, clean elevator per Section 01580.

Stairs and Ramps: Do not cover stairs or ramps with unsecured plastic sheeting. Where stairs or ramps are necessary to be covered with plastic sheeting, provide treads securely held in place, over the plastic sheeting. Do not cover rungs or rails with protective materials.

Drop Cloth: Provide on the floor and wall areas as a Drop Cloth a single layer of plastic sheeting (6 mil on floor, 4 mil on wall) in Work Areas during removal operations. Turn floor Drop Cloth up walls at least eighteen (18) inches. Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Overlap wall Drop Cloth twelve (12) inches at floor. Seal seams using both spray adhesive and adhesive tape.

Install Drop Cloth at the beginning of each work shift. Drop cloth needs only to be sufficient coverage for work of that shift.

Remove Drop Cloth at end of each work shift or as work in an area is completed. Fold Drop Cloth toward center of sheet and dispose as lead-contaminated waste.

Keep material on sheet continuously wet until bagged.

Install Walkways of 6 mil plastic sheeting between active removal areas and decontamination units to protect Containment Barriers from tracked material. Install walkways at the beginning of, and remove at the end of each work shift.

EXTENSION OF WORK AREA:
If the Containment Barrier is breached in any manner that could allow the passage of debris or airborne lead, then add the affected area to the Work Area and provide Temporary Containment as required by this Section.

**---------- END OF SECTION ----------**

**PRE-CLEANING AND DECONTAMINATION PROCEDURES SECTION 01510**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DESCRIPTION OF THE WORK:
The Work includes decontamination of areas prior to construction of Temporary Containment.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

RESPIRATORY AND WORKER PROTECTION:
Provide Worker Protection per Section 01700.

Provide Respiratory Protection per Section 01710.

WET CLEANING (WET WIPING):
Accomplish wet cleaning during decontamination with lint-free towels (paper or disposable rags).

Immerse towel in container of water with surfactant or diluted removal encapsulant.

When using a High Phosphate Detergent (HPD), test first to insure that it will leave neither a residue that will impede visual inspection nor become gummy during cleaning.

Wring out; fold into quarters.

Wipe surface once and refold to a fresh face of cloth. Proceed in this manner until available faces of towel have been used.

Dispose of towel as lead-containing waste material.

Do not place towel back in container to rinse out or for any other purpose. If a used towel comes in contact with water, dispose of water as lead-containing waste material and decontaminate container.

Application of additional HPD may be required to facilitate cleaning of strongly adhered material.

HEPA VACUUM PROCEDURES:

Clean small areas of debris using the following procedures:

Remove small debris with the HEPA vacuum.

HEPA vacuum surfaces of debris pieces too large to be removed by the suction of the HEPA vacuum, pick up such pieces and place in the bottom of a Disposal Bag.

Place pieces in the bag without dropping and avoiding unnecessary disturbance of material.

Remove remaining visible debris with HEPA vacuum.

HEPA vacuum an area three (3) feet beyond the location in which visible debris was found. Vacuum in two directions each at right angles to the other.

Clean wall, ceiling, and floor surfaces using the following procedures:

HEPA vacuum surfaces in the room starting with the ceiling, then vacuum starting at the top of walls and working downward to the floor. Next begin at the corner of floor farthest from Work Area entrance and work towards entrance.

HEPA vacuum the floor using a floor attachment with rubber floor seals and adjustable floor to attachment height.

Adjust the height so that the rubber seals just touch the floor if carpeted and are within 1/16" of hard surface floors.

Vacuum the floor in parallel passes with each pass overlapping the previous by one half the width of the floor attachment. At the completion of one cleaning, vacuum the floor a second time at right angles to the first.

**---------- END OF SECTION ----------**

**DECONTAMINATION UNITS** **SECTION 01520**

## PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

DESCRIPTION OF WORK:
Provide personnel and equipment decontamination facilities.

## PART 2 - PRODUCTS

Plastic Sheeting: A single polyethylene film in the largest sheet size possible to minimize seams, 4 or 6 mils thick as indicated, translucent or opaque, as indicated.

Fire Retardant Plastic Sheeting: When working near hot equipment, in fire potential area, or otherwise required provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.

Reinforced Plastic Sheeting: Provide nylon-reinforced, laminated polyethylene film.

Spray Plastic: Provide spray plastic in aerosol cans or premixed for spray application which is formulated to adhere gently to surfaces and remove cleanly by peeling off at the completion of the Work. Use of spray plastic must be approved in advance by the **CONSULTANT**.

Adhesive Tape: Provide adhesive tape in 2" or 3" widths as indicated or required, with an adhesive which is formulated to aggressively stick to sheet polyethylene and other surfaces in a wet, humid, hot environment.

Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene, and other surfaces in a wet, humid, hot environment. Use only on surfaces not scheduled to be salvaged, or on surfaces which can be cleaned of the spray adhesive.

Shower Pan: Provide one piece waterproof shower pan fabricated from seamless fiberglass, stainless steel with welded seams, or other system acceptable to the **CONSULTANT**.

Shower Walls and Roof: Provide walls and roof fabricated from impervious, waterproof material. Structurally support as necessary for stability.

Shower Head and Controls: Provide a factory made, personal use, commercial shower head producing a spray of water which can be adjusted for spray size and intensity. Feed shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is made from inside the shower without outside aid.

Filters: Provide cascaded filter units on drain lines from showers or other water source carrying lead-contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.

Primary Filter - Pass particles 20 microns and smaller

Secondary Filter - Pass particles 5 microns and smaller

Waste Water Reservoir: Provide a system to collect waste water from the shower drain. The **CONTRACTOR** shall provide TCLP tests for waste water collected and properly dispose of waste water after determination of its waste category.

Disposal of Waste Water: Per Austin City Code 18-2 – Industrial waste water discharge.

Lumber: Provide kiln dried lumber of any grade or species.

Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump two (2) times the flow capacity of showers or hoses supplying water to the sump, through filters loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

Disposable Decontamination Unit: The **CONTRACTOR** may provide, as an option, disposable Decontamination Units fabricated utilizing corrugated cardboard or other non-cleanable materials. Units shall be disposed as lead-contaminated waste material.

## PART 3 - EXECUTION

### CONSTRUCTION:

Walls and Ceiling: Construct airtight walls and ceiling using plastic sheeting, 6 mil (minimum) in thickness. Attach to existing building components or to a temporary framework.

Floors: Use a minimum of two (2) layers of plastic sheeting, 6 mil (minimum) in thickness, to cover floors (including under shower pan). Use only translucent or clear plastic sheeting to cover floors.

Curtained Doorways: Fabricate from two (2) overlapping layers of plastic sheeting with openings a minimum of three feet (3') wide. Configure so that sheeting overlaps adjacent surfaces. Weight sheets at bottom so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of four feet (4') between entrance and exit of any room. Attach top and right side of outer sheet to doorway frame. Attach top and left side of inner sheet to doorway frame.

Ceiling: If the decontamination unit is located within an area with workers overhead, provide the top of the unit with a minimum 1/4 inch hardboard or ½ inch plywood "ceiling" with plastic sheeting, 6 mil (minimum) in thickness, covering the top of the "ceiling".

Visual Barrier: Where the decontamination unit is within view of occupied areas, provide a visual barriers of opaque plastic sheeting or other suitable material so that worker privacy is maintained and work procedures are not visible to building occupants.

Solid Barrier: Where the area adjacent to the decontamination unit is accessible to building occupants, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal framing covered with minimum of 1/4 inch thick hardboard or ½ inch plywood. Where a solid barrier is

provided, sheeting need not be opaque.

Alternate methods of providing decontamination facilities may be submitted to the **CONSULTANT** for review. Do not proceed with alternate method(s) without authorization of the **CONSULTANT**.

PERSONNEL DECONTAMINATION UNIT:

General: Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, with a minimum of a Changing Room, Shower Room, and Equipment Room.

Require persons, without exception, to pass through this Decontamination Unit for entry into and exiting from the Work Area.

Do not allow parallel routes for entry or exit.

Provide temporary lighting within Decontamination Units as necessary.

Electrical: Provide control panel at Changing Room or other outside location to accommodate **CONTRACTOR**'s equipment. Provide complete ground-fault circuit protection for electrical service from control panel, and in accordance with applicable regulations.

Emergency Numbers: Clearly post in Changing Room (Clean Room) the telephone numbers and locations of emergency services including, but not limited to, fire, ambulance, doctor, hospital, police, power company, telephone company.

Signs: Post an approximately twenty inch by fourteen inch (20" x 14") manufactured danger sign at each entrance to the Work Area displaying the following general legend, and as required by applicable regulations

**DANGER**
**LEAD ABATEMENT**
**BRAIN, LIVER, KIDNEY AND BLOOD HAZARD**
**AUTHORIZED PERSONNEL ONLY**
**RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA**

AND

WARNING

LEAD WORK AREA

POISON

NO SMOKING OR EATING

AUTHORIZED PERSONNEL ONLY

The **CONTRACTOR** shall insure these signs are posted in every work area and they are illuminated and cleaned as necessary so that the legend is readily visible.

Signage shall be placed at approaches to the Work Area at such positions that personnel will have adequate time to take precautions. Post signage so as not to be in view of the general public inside or outside of the building.

Changing Room (Clean Room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

Locate so that access to Work Area from Changing Room is through Shower Room.

Separate Changing Room from other building areas by curtained doorway.

Require workers to remove street clothes in this room, dress in clean disposable coveralls, and don respiratory protection equipment.

Do not allow lead-contaminated items to enter this room.

An existing room may be utilized as the Changing Room if it is suitably located and of a configuration whereby workers may enter the Changing Room directly from the Shower Room. Protect surfaces of such Changing Room with plastic sheeting similar to Containment Barriers as set forth in Section 01500. Authorization for this configuration must be obtained from the **CONSULTANT** prior to start of Work.

Maintain floor of Changing Room dry and clean at all times.

Damp wipe surfaces after each shift change with a disinfectant solution.

Provide a continuously adequate supply of disposable bath towels.

Provide storage facilities per employee as required with additional facilities for **CONSULTANT** and anticipated visitors.

Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of Work Area after undressing in the Equipment Room.

Construct room by providing a Shower Pan and Shower Walls in a configuration that will cause water running down walls to drip into pan.

Provide Shower Head and Controls at convenient location securely attached to shower wall.

Provide splash proof entrances to Changing and Equipment Rooms with two (2) curtained doorways.

Provide hot and cold water and drainage, as necessary for a complete and operable shower. Provide adequate hot water supply for number of persons using shower facilities.

Provide a freely draining floor in shower pan at minimum one (1) inch from top of pan.

Provide a soap and shampoo dish and a continuously adequate supply of soap and shampoo, and maintain in a sanitary condition.

Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

Provide Sump Pump to pump waste water through filters to drain.

Change filters as necessary to maintain efficiency.

Clean debris from shower pans on a daily basis.

Equipment Room (Dirty Room): This is a change and transit area for workers. Separate this room from the Work Area by a plastic sheeting curtained doorway. Require work equipment, footwear and additional contaminated work clothing to be left in Equipment Room.

Provide Drop Cloth per Section 01500 in Equipment Room for each shift. Remove and dispose of Drop cloth after each shift.

Wet wipe surfaces in Equipment Room after each shift change.

Disposable Decontamination Unit: Disposable units shall be utilized at one location per containment and then disposed as lead-contaminated waste material. Moving a disposable unit from one location to another is prohibited.

PERSONNEL DECONTAMINATION SEQUENCE:

Entering Work Area: Worker shall enter Changing Room, remove street clothing, put on clean disposable overalls and respirator, and pass through the Shower Room into the Equipment Room.

Additional clothing and equipment left in Equipment Room needed by the worker shall be put on in the

Equipment Room.

Worker shall then proceed to Work Area.

Exiting Work Area:
Before leaving the Work Area, require the worker to remove gross contamination and debris from overalls and feet. The worker shall then proceed to the Equipment Room and remove disposable clothing. Removed disposable clothing shall be placed in a disposal bag for disposal. Respiratory protection equipment shall not be removed.

Refer to Section 01700 for Shower Room decontamination procedures.

After showering, the worker shall proceed to the Changing Room and dress in either new coveralls for another entry or street clothes if leaving.

EQUIPMENT (BAG-OUT) DECONTAMINATION UNITS:

General: The **CONTRACTOR** may provide an Equipment and Bag-out Decontamination Unit consisting of a serial arrangement of rooms (Wash Down Station, Wash Room, Holding Room, Clean Room) for removal of equipment and material from Work Area. Personnel shall not enter or exit Work Area through Equipment Decontamination Unit.

Wash Down Station: Provide an enclosed completely watertight shower unit located in the Work Area just outside Wash Room as an equipment, bag and container cleaning station.

Construct shower by providing a Shower Pan and Shower Walls in a configuration that will cause water running down walls to drip into pan.

Provide suitable type of fixtures and controls for washing equipment, bags and containers.

Provide splash proof entrance to Work Area with curtained doorway.

Provide a freely draining floor in shower pan at minimum one (1) inch from top of pan.

Provide Sump Pump to pump waste water through filters to drain. Change filters as necessary to maintain efficiency.

Clean debris from shower pans on a daily basis.

Wash Room (Dirty Room): Provide Wash Room for cleaning of equipment, bags and containers passed from the Work Area. Construct Wash Room of adequate size and located so that equipment, bags and containers, can be wiped clean and passed to the Holding Room. Separate this room from the Wash Down Station by a curtained doorway.

Holding Room: Provide Holding Room as a drop location for equipment, bags and containers passed from the Wash Room. Size and locate so that equipment, bags and containers cannot be passed directly from the Wash Room through the Holding Room to the Clean Room. Separate Holding Room from the adjacent rooms by curtained doorways.

Clean Room: Provide Clean Room to isolate the Holding Room from the building or exterior. Size and locate

to provide access to the Holding Room. Separate Clean Room from the building or exterior by a curtained doorway.

EQUIPMENT (BAG-OUT) DECONTAMINATION SEQUENCE:

Remove equipment, bags and containers from the Work Area through the Equipment Decontamination Unit according to the following procedure:

At Wash Down Station, thoroughly wash equipment, bags and containers and pass items into Wash Room.

At Wash Room, wet clean equipment, bags and containers per Section 01510 and pass items into Holding Room. Workers shall not enter the Holding Room from the Wash Room.

Enter Holding Area from Clean Room and remove decontaminated items through the Clean Room. Workers shall not enter the Wash Room from the Holding Room.

CLEANING OF DECONTAMINATION UNITS:
Clean debris and residue from inside of Decontamination Units on a daily basis. Wet wipe or wash surfaces when necessary to maintain sanitary conditions.

If the Changing Room of the Personnel Decontamination Unit or the Clean Room or Holding Room becomes contaminated, abandon the Decontamination Unit and erect a new Decontamination Unit. The former Unit may be used as an inner section of the new "Dirty Room".

**---------- END OF SECTION ----------**

**VENTILATION SYSTEM** **SECTION 01530**

## PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

## PART 2 - PRODUCTS

VENTILATION UNITS:

General: Supply adequate number of lead air filtration exhaust ventilation units. Each unit shall include the following:

Cabinet: Constructed of steel or other durable materials able to withstand damage from rough handling and transportation. Provide cabinet widths to accommodate doorways. Cabinet shall be factory sealed to prevent lead-containing material from being released during use, transport, or maintenance. Access to and replacement of air filters shall be from intake end. Unit shall be mounted on casters or wheels.

Fans: Rate capacity of fan according to usable air-moving capacity under actual operating conditions. Use centrifugal-type fan.

HEPA Filters: The final filter shall be a HEPA type. Provide filter media folded into closely pleated panels. Completely seal the filter media edges with a structurally rigid frame. A continuous rubber gasket shall be located between the filter and the filter housing to form a tight seal.

Each filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 % when challenged with 0.3 um dioctyl phthalate (DOP) particles. Testing shall be in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Each filter shall bear a UL586 label to indicate ability to perform under specified conditions.

Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of the air flow.

Prefilters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. The first-stage prefilter shall be a low-efficiency type (e.g., for particles 10 um and larger). The second-stage (or intermediate) filter shall have a medium efficiency (e.g., effective for particles down to 5 um). Prefilters and intermediate filters shall be installed either on or in the intake grid of the unit and held in place with special housings or clamps.

Instrumentation: Each unit shall be equipped with a Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed.

A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge shall be affixed near the gauge for reference, or the Magnehelic reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at that point.

Provide units equipped with an elapsed time meter to show the total accumulated hours of operation.

Safety and Warning Devices: Each unit shall have an electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter. Units shall be equipped with an automatic shutdown system to stop fan in the event of a major rupture in the HEPA filter or blocked air discharge.

Warning lights are required to indicate normal operation, excess pressure drop across the filters (i.e., filter overloading) and inadequate pressure drop (i.e., major rupture in HEPA filter or obstructed discharge).

Electrical components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit shall be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet shall be grounded.

## PART 3 - EXECUTION

GENERAL:
The following is intended to provide a satisfactorily reduced air pressure and ventilation rate in the Work Area.

PRESSURE DIFFERENTIAL:
Provide a fully operational ventilation system within the Work Area continuously maintaining a pressure differential across Work Area containment of 0.02 inches of H2O. Maintain a written log of monometer readings – calibrate once per day.

PREPARATION OF THE WORK AREA:

Determining ventilation requirements: Provide a sufficient number of fully operational ventilation units to provide the equivalent of a minimum of one air change every twelve (12) minutes within the contained Work Area. Determine total ventilation requirement in cubic feet per minute (cfm) for the Work Area by dividing area volume by the air change rate.

$$\text{Ventilation Requirement (CFM)} = \frac{\text{Volume of Work Area (cu.ft.)}}{\text{12 (min)}}$$

Determining number of units needed by dividing the ventilation requirement (CFM) above by capacity of ventilation unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential at which loaded filter warning lights activate) indicated on the unit's labeled operating characteristics.

$$\text{Number of Units} = \frac{\text{Ventilation Requirement (CFM)}}{\text{Capacity of Unit with Loaded Filters (CFM)}}$$

Location of Ventilation Units: Locate ventilation unit(s) so that makeup air enters Work Area primarily through decontamination facilities and traverses Work Area as much as possible. Position the ventilation unit(s) at a maximum distance from the worker access opening or other makeup air sources.

Place exhaust end of unit or exhaust duct through an opening in the containment barrier or wall. Thoroughly seal opening against unit or duct.

Vent to exterior of building, unless authorized otherwise by the **CONSULTANT**. As necessary, provide

additional lengths of flexible or rigid duct connected to the exhaust end of unit and routed to the nearest exterior opening.

Auxiliary Makeup Air Inlets: Provide where required for proper air flow through the Work Area in locations approved by the **CONSULTANT** by making openings in the plastic sheeting that allows air from outside the Work Area into the Work Area.

Locate auxiliary makeup air inlets as far as possible from the ventilation unit(s), off the floor, preferably near the ceiling, and away from barriers that separate the Work Area from occupied areas. Cover with flaps to reseal automatically if the ventilation system should shut down for any reason. Spray flap and around opening with spray adhesive so that flap seals if closed.

If makeup air is coming from a contaminated or potentially contaminated source, provide a HEPA filter at intake before air enters Work Area. Provide supply air fans to overcome the resistance of the HEPA filter as necessary. A ventilation unit may be used for this purpose. Calculations for air change requirements shall accommodate force makeup air to insure that Work Area remains under reduced air pressure.

OPERATION OF VENTILATION SYSTEM:

Electrical Service: Provide adequate electrical service to ventilation units. Provide separate overload protection devices to each unit such that an overload on one unit will not trip devices of other units in operation.

Testing the System: Test ventilation system prior to start of removal operations. Demonstrate successful operation of ventilation system to **CONSULTANT** during Prep Inspection per Section 01400.

Demonstration of the Operation of the ventilation system to the **CONSULTANT** shall include, but not to be limited to, the following:

Containment Barriers moving lightly in toward Work Area.

Curtained doorways of decontamination units moving lightly in toward Work Area.

Noticeable movement of air through the decontamination unit.

Measurement of the reduced air pressure.

Modify the Ventilation System as necessary to successfully demonstrate the above to the satisfaction of the **CONSULTANT**.

Operation of System during Abatement:

Operate system continuously to maintain a constant reduced air pressure until decontamination of the Work Area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop. If failure of ventilation system occurs, immediately stop abatement work and do not resume until system is fully operating.

Operate system continuously during encapsulating procedures.

Start removal work at a location farthest from the ventilation units and proceed toward the units.

At completion of removal work, allow ventilation system to operate to purge the Work Area with clean makeup air and to remove airborne lead that may have been generated during removal work.

Operate system continuously until **CONSULTANT** authorizes shut down after successful Final Clearance Air Testing.

Dismantling the System:

Before removal of units from the Work Area, remove and dispose of pre-filters as lead-containing waste material, clean and seal unit intake and exhaust openings with 6 mil plastic sheeting, decontaminate exterior of units and seal entire unit, except rolling assembly, with 6 mil plastic sheeting.

---------- **END OF SECTION** ----------

**REMOVAL OF LEAD-CONTAINING MATERIALS** **SECTION 01540**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

SUBMITTALS:
Submit OSHA Material Safety Data Sheet (MSDS) for solvents, strippers, encapsulants, cleaning solutions, and other chemicals utilized or stored at the job site.

PART 2 - PRODUCTS

PLASTIC SHEETING, ADHESIVE TAPE, etc: Refer to Section 01500.

DISPOSAL BAGS: Provide single layer, 6 mil (min) thickness, leak-tight, manufactured polyethylene bags.

DISPOSAL CONTAINERS: Provide U.S. Department of Transportation (DOT) approved disposal drums, as applicable for the type of waste generated.

DISPOSAL BAG LABELS: Provide labels with **OWNER**'s name, Project site address and the following warning, and in accordance with regulatory requirements.

**DANGER**
**CONTAINS LEAD**
**AVOID CREATING DUST**
**BRAIN, LIVER, KIDNEY, AND BLOOD HAZARD**

REMOVAL PRODUCTS/EQUIPMENT:
Removal products and equipment shall be determined by the **CONTRACTOR**, except for the following

prohibited items:

Dry blasting or dry scraping equipment, without a HEPA vacuum attachment
Compressed air or other non-airless type equipment
Heat guns
Chemical strippers that contain methylene chloride

PART 3 – EXECUTION

COMPONENT REMOVAL

- Replacement
- Encapsulation

COMPONENT REPLACEMENT:

If the component to be replaced is in good condition, it should be wrapped in one layer of six millimeter polyethylene sheeting and carefully removed from the binding hardware (i.e., hinges, clamps, screws). If the component cannot be wrapped in polyethylene sheeting before removal, the surface should be kept wet with amended water until removed from the binding hardware. If feasible, a drop cloth of six millimeter polyethylene sheeting should be placed under the work area where the component has been removed, shall be thoroughly cleaned with a high phosphate detergent mixture as outlined in the next paragraph.

If the component to be replaced is in poor condition, (peeling paint, dusty surface), then a pre-cleaning of the surface should be performed prior to removal. The pre-cleaning will consist of wet wiping the surface with rags or cloths that have been dipped in a high phosphate detergent designed to enhance the clean up of LCM's. The contaminated rags or cloths should be used and discarded as LCM. The contaminated rags or cloths should not be dipped back in the uncontaminated detergent. After the surface has been thoroughly cleaned, removal of the component may proceed using the procedure outlined above.

Temporary Storage: After the component has been wrapped in the polyethylene sheeting, it should be properly labeled (see section on labeling above) and temporarily stored in a regulated area with restricted access until final disposal. Disposal should be in accordance with City requirements. Section 1590. The regulated area will consist of a demarcated area with at least one warning sign in place (as per 29 CFR 1926.62). The area where the components will be temporarily stored will have a minimum of one layer of six millimeter polyethylene sheeting on the floor. The components will be disposed of as soon as is feasible but no longer than 30 days from time of removal.

ENCAPSULATION:

Encapsulation is the process of covering the lead-containing surface with a non-lead paint or resin so as to seal the lead-containing surface material.

If the surface area to be encapsulated is in good condition, no pre-cleaning is necessary and may be painted or coated without any environmental restrictions. A small test area should be painted first to see if any lead-containing material will be disturbed with the process to be used. If disturbance occurs, refer to the procedure below.

If the surface to be encapsulated is in poor condition (peeling paint, dusty surface), a pre-cleaning of the surface should be performed. A drop cloth of six millimeter polyethylene shall be placed directly under and around the surface to be cleaned. The surface should be kept wet at all times with amended water, and any loose paint should be hand scraped. Never use mechanical means for scraping the loose paint (such as air scalers, grinders or sanders). After all of the loose paint is removed, the waste material should be placed in a six-millimeter polyethylene disposal bag or polyethylene lined box or drum. Never let loose paint chips accumulate on the drop cloth or become dry. After all loose material has been removed and disposed of, a pre-cleaning of the surface with a high phosphate detergent should be performed as outlined above. All waste material including the polyethylene sheeting shall be disposed of as LCM. The different types of LCM waste material should be segregated and disposed of in separate drums or containers as outlined in section 01590. The LCM waste containers should be stored in a temporary storage area as outlined above.

GROSS REMOVAL:
The majority of the work to be performed will be on lead-based paint/primer (LBP). The gross removal procedures will outline the stripping of lead-based paint/primer from the surfaces of components.

Off-site LBP Removal:
Sometimes it is not feasible to remove LBP on-site from a component. In cases where a particular component cannot be replaced, it may be removed (following replacement procedures outlined above) and taken to a paint stripping facility. The facility will be equipped with chemical tanks for immersing the component (chemical removal) or abrasive blasting containment (mechanical removal). The **CONTRACTOR** will be responsible for the total removal of the LBP from the component.

On-site LBP Removal:
There are two types of on-site LBP removal procedure:

- Chemical Stripping
- Mechanical Stripping

Chemical Stripping:
Chemical stripping will be performed with a peel away type stripper that does not contain methylene chloride. All chemicals to be used for the removal project will be submitted to the **CONSULTANT** for approval prior to abatement.

Site Preparation: The area immediately under the component to be stripped will be covered with a minimum of two layers of six millimeter polyethylene sheeting, with a layer of cardboard or similar material between the two layers of polyethylene. The work area will be demarcated by using warning tape and warning signs in accordance with 29 CFR 1926.62. A three-stage decontamination area (see section 01520 for specifications) will be established in close proximity to the project. The distance will be as close as feasible to the regulated area so as to reduce the travel distance of the abatement worker. All abatement personnel will be in disposable clothing, appropriate eye, hand, and body protection, and wearing as a minimum a half face negative pressure respirator that is approved for lead abatement.

Removal Procedures: The chemical stripper will be applied with a brush or similar hand applied tools. The chemical stripper will be covered with polyethylene sheeting or any other means of keeping the chemical stripper from drying out while on the component. After the required amount of time for the chemical stripper to react with the LBP (this will fluctuate with the type of chemical stripper, temperature, humidity, and component substrate), a glovebag (if chemical stripping is being performed without containment) will be sealed around the area being stripped. After the glovebag is in place, the **CONTRACTOR** must get approval to proceed from the **CONSULTANT**'s on-site representative. After approval, the **CONTRACTOR** can proceed with hand scraping

the LBP from the component. Chemical stripper may be reapplied following the same procedures until all LBP has been removed.

Post Cleaning Procedures: After the LBP has been removed, the glovebag should be carefully removed from the component. The glovebag should then be collapsed by using a HEPA vacuum, and then sealed with duct tape. The glovebag should then be put into a disposal bag, properly labeled, and then deposited into the proper disposal drum or lined box. The abated area shall then be cleaned with a high phosphate detergent (wet wiped by hand with rags or cloths) until no visible residue or streaks remain. For areas to be repainted, the stripped area may then be cleaned with denatured alcohol or other approved solvent.

Visual Inspection and Clearance: When all post cleaning procedures are completed, the **CONTRACTOR** will inform the **CONSULTANT**'s representative, and the representative will perform a visual inspection to ensure all LBP has been removed. If the visual inspection passes approval, at the representative's discretion, he can waive the need for clearance samples, or he can collect wipe clearance samples as outlined in section 01410.

Clean up: All waste materials (rags, cloths, polyethylene sheeting, etc.) will be disposed of in the proper segregated waste drum or lined boxes as outlined in section 01590. After all waste materials have been removed from the regulated area, the warning signs and tape may be removed and the **CONTRACTOR**'s personnel shall proceed to the decontamination area.

Mechanical Stripping: Mechanical stripping is the removal of LBP from the surface of a component utilizing abrasive blasting equipment in a full negative pressure containment. This method should be performed when all other options are not feasible and only when authorized by the Owner in writing, due to the size of the area to be abated, the type of substrate to be abated, or other conditions that dictate mechanical stripping as the only alternative method of removal.

Site Preparation: (see section 01510)

Decontamination Unit: (see section 1520)

Temporary Containment & Ventilation System: (see sections 01500 and 01530)

Removal Procedures: The gross removal of LBP by mechanical stripping shall be done by wet abrasive blasting or any approved method of abrasive removal. The abrasive material shall not be composed of silica sand or any other material known to be an environmental hazard. Precautions will be taken to ensure that the containment is not in direct contact with any abrasive blasting activities so as to ensure no breach in containment. These precautions would include reinforcing behind components with plywood or similar material that will protect the polyethylene sheeting. All waste material is to be cleaned-up continuously. At no time will waste material be allowed to accumulate on the floor or become dry.

Post Cleaning Procedures: After all waste materials are cleaned-up and bagged, the components bare substrate, equipment, and any other non-waste materials will be cleaned with a high phosphate detergent as outlined in the chemical stripping section above.

Clean up: All waste will be disposed of as outlined in section 01590.

Visual Inspection: After post cleaning procedures are performed and all waste materials are bagged and disposed of, the **CONTRACTOR** will inform the **CONSULTANT**'s representative that a visual inspection is requested. The **CONSULTANT**'s representative will insure that all abated areas have been completely stripped with no visible residue or streaks, and that the containment has been thoroughly cleaned. After the approval by the **CONSULTANT**'s representative, the clearance procedures may be initiated.

Clearance Procedures: After the visual inspection has been approved, the **CONTRACTOR** will remove one layer of polyethylene sheeting from all walls, ceiling and floor. The containment will then be vacated for twenty-four hours (as per HUD guidelines) with the negative pressure ventilation system running. After twenty-four hours the **CONSULTANT**'s representative will collect wipe clearance samples inside the containment as outlined in section 01410. After the clearance samples have been analyzed and passed clearance criteria as outline by HUD and section 01410, the containment may be removed and disposed of as LCM.

If samples fail to meet clearance criteria, post cleaning procedures, visual inspection, and clearance procedures shall be repeated until satisfactory samples are obtained.

CONTAINING WASTE MATERIALS:

General: Waste materials generated during lead abatement, including but not limited to bagged or wrapped waste, unfiltered waste water from decontamination units, chemical waste, abrasives from wet abrasive blasting, contaminated clothing, polyethylene sheeting, filters, cleaning fluids and materials, etc. shall be bagged wrapped in polyethylene or placed in disposal drums or lined boxes (see segregation of waste in section 01590).

Use the most appropriate container for preventing leaks. Store lead or chemical-contaminated waste in drums approved by D.O.T. for shipping hazardous waste.

Contain each type of waste separately (example – do not place contaminated clothing and polyethylene sheeting in the same bag or drum) (see waste minimization and segregation in section 01590).

Attach label to each container describing type of waste material contained. (See Section 1590)

**DISPOSAL BAG PROCEDURE**:

Place removed material into disposal bags.

Evacuate air from disposal bags with a HEPA vacuum before sealing.

Twist neck of bags, bend over and seal with minimum three (3) wraps of adhesive tape.

Clean outside of bags and move to decontamination unit.

Place second bag around first immediately prior to moving through decontamination unit. Evacuate air, twist neck, and seal the second bag in the same manner as the first.

Wash bags in shower, wet clean, and pass cleaned bags to adjacent room.

Attach label to each disposal bag as indicated and in accordance with regulatory requirements. (See Bag Labeling Procedure, Section 01590)

**DISPOSAL CONTAINER PROCEDURE**:

Place removed material into disposal containers. Seal containers securely.

Clean outside of containers and move to decontamination unit.

Wash containers in shower, wet clean, and pass cleaned containers to adjacent room.

Attach label to each container as indicated and in accordance with regulatory requirements.

**WRAPPING PROCEDURE**:

If authorized by the **CONSULTANT**, rigid waste material that will not easily fit into disposal bags (panels, boards, pipe, etc.), may be double wrapped as follows:

Tape sharp edges that may perforate wrapping.

Wrap manageable quantities of waste material in one layer of 6 mil polyethylene and seal with duct tape. Clean outside of first layer and move bundle to decontamination unit.

In decontamination unit, wrap second 6 mil layer around first and seal with duct tape.

Wash bundles in shower, wet clean, and pass cleaned bags to adjacent room.

Attach label to each bundle as indicated and in accordance with regulatory requirements.

TESTING WASTE MATERIALS: (To be provided by **OWNER** or **OWNER** representative)

Provide a total metals TCLP test (Toxicity Characteristic Leaching Procedure) for each type of waste generated during lead abatement.

Provide TCLP test for RCRA 8 metals to determine hazardous waste category under the Resource Conservation and Recovery Act (RCRA).

Test chemical-contaminated waste for reactivity, corrosivity and reactivity. Provide test results to Environmental Waste Program Coordinator. Determine disposal method and type of disposal facility, based on the results of TCLP testing for each type of waste generated.

A waste type shall be classified as hazardous if the TCLP leachate of the sample tested contains concentrations above the maximum limit for any one of the following eight metals:

| Metal (Common Name) | Maximum Limit in parts per million |
|---|---|
| Arsenic | 5.0 |
| Barium | 100.0 |
| Cadmium | 1.0 |
| Chromium | 5.0 |
| Lead | 5.0 |
| Mercury | 0.2 |
| Selenium | 1.0 |
| Silver | 5.0 |

DISPOSAL:

Dispose of labeled bags, containers and bundles per Section 01590.

**---------- END OF SECTION ----------**

**REMOVAL OF TEMPORARY CONTAINMENT SECTION 01580**

## PART 1 - GENERAL

### RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

### SUMMARY:

This section describes procedures following the removal of indicated lead-contaminated materials to the completion of abatement activities, including removal of temporary containment, equipment, supplies, and temporary facilities from the Project site.

### SUBMITTALS:

Clearly indicate in submittals finishes or coatings (if any) which may be incompatible with proposed high phosphate detergent.

### PRODUCT DELIVERY:

Deliver products per Section 01370, and include the following information: name or title of material, manufacturer's stock number and date of manufacture, thinning instructions, and application instructions.

Deliver products together with a copy of the OSHA Material Safety Data Sheet for the material.

## PART 2 - PRODUCTS

### HIGH PHOSPHATE DETERGENT:

Provide a detergent with a phosphate content of at least five (5) percent specifically designed for use with lead-containing materials and for the specific use of removing residual lead dust and particles.

Provide detergent suitable to receive painted or primed finishes.

Fire Safety: Use only materials that have a flame spread index of less than twenty-five (25), when dry, when tested in accordance with ASTM E-84.

## PART 3 - EXECUTION

GROSS REMOVAL:
Work of this Section begins at completion of gross removal Work.

POST CLEANING PROCEDURES:

Remove all but the bottom most layer of the Containment Barriers.

Decontaminate surfaces of remaining Containment Barriers with a HEPA vacuum and by wet wiping per Section 01510.

HIGH PHOSPHATE DETERGENT:

Apply detergent in strict accordance with the manufacturer's instructions, including requirements for environmental conditions in the Work Area.

Accomplish wet cleaning during decontamination with cling-free towels (paper or disposable rags).

Immerse towel in container of water mixed with a High Phosphate Detergent (HPD).

When using a HPD, test first to insure that it will leave neither a residue that will impede visual inspection nor become gummy during cleaning.

Wring out; fold into quarters.

Wipe surface once and refold to a fresh face of cloth. Proceed in this manner until available faces of towel have been used.

Dispose of towel as lead-containing waste material.

Do not place towel back in container to rinse out or for any other purpose. If a used towel comes in contact with water, dispose of water as lead-containing waste material and decontaminate container.

Application of additional HPD may be required to facilitate cleaning of strongly adhered material.

Do not apply detergent to mechanical and electrical equipment, moving parts, gauges, glass and similar surfaces.

POST FINAL CLEARANCE PROCEDURES:

Remove Containment Barriers:

Decontaminate exposed surfaces of Work Area which visually exhibit debris or water contamination with a HEPA vacuum and by wet wiping per Section 01510.

Remove Critical Barriers.

Decontaminate exposed surfaces of Work Area which visually exhibit debris or water contamination with a HEPA vacuum and by wet wiping per Section 01510.

Remove Ventilation System.

Remove Decontamination Units.

Decontaminate exposed surfaces at removed Decontamination Units which visually exhibit debris or water contamination with a HEPA vacuum and by wet wiping per Section 01510.

**---------- END OF SECTION ----------**

**PAINT WASTE PROCEDURES** **SECTION 01590**

PART 1 - GENERAL

- When lead abatement projects take place at Austin Energy facilities, AE is considered the generator of the ensuing waste, and therefore, is ultimately responsible for the proper management and disposal of the waste. By following the procedures below, the **CONTRACTOR** can better ensure the smooth management of this material.

1. Waste should be packaged[1], containerized[2], weighed[3], and labeled[4] at the end of each day.

   - Waste should be weighed when moved to the storage container.

2. Record all pertinent information in the **Facility Contractor's Waste Inventory Log and Complete Waste Service Request (WSR) (see attached forms).**

3. Begin characterization of waste with assistance of Environmental Waste Program Program Coordinator.

   a) Submit a Waste Services Request (WSR) to request sampling and disposal services. You may wish to characterize each week's accumulation of waste for ongoing, e.g., month-long, projects. Shorter projects may require sampling at the end. Don't forget to segregate waste according to constituents and method of generation. For example, separate debris from paint chips or solvent-contaminated waste from waste with paint only. Keep copy of request with waste log for reference.

   b) Waste that has been contaminated with EPA listed hazardous waste solvents does not require testing. Simply label the container as hazardous waste and add the appropriate hazardous waste codes, for example, a paste stripper used in recent lead abatement jobs contained ACETONE (FOO1), METHANOL(FOO3), METHYL ETHYL KETONE (D035, F005), and a TOLUENE (F005). Provide the products, MSDS to Waste Program Coordinator who will assist with obtaining these EPA waste codes.

   c) If the waste has been tested and characterized as non-hazardous, apply the appropriate pre-printed label (if available) and make any necessary corrections to the waste inventory log.

4. Begin coordination of waste disposal with Environmental Waste Program Coordinator. Have the following information ready:
   a) Number of containers,
   b) Location of containers,
   c) Preferred dates of waste pick-up (dates you will be available).

5. Be sure to add weights of lead abatement waste to the Monthly Waste Inventory and submit waste generation information to Environmental Services by the 7th of each month. Provide facility Environmental Waste Program Coordinator and monthly waste generation information by the 5th working day of each new month for the previous month.

LEGEND SUPERSCRIPT SUMMARY:

[1]Waste will be placed in Department of Transportation (D.O.T.) approved drums of appropriate size or in labeled, designated, and lined-cubic yard boxes.

Segregate different types of waste, for example:

1. Suits and rags,
2. Plastic sheeting,
3. Paint chips, or
4. Waste with EPA listed hazardous solvent
5. Aerosol cans.

[2]If waste is placed in drums, the entire container will be weighed. If waste is placed in cubic yard boxes, the waste will be weighed prior to placing in the box. Record all weights in the Facility Waste Inventory Log.

[3]Label the container with the following information (Fill out a pre-printed label, if available. If not, mark the container with an indelible, permanent marker, such as a paint pen or grease pencil.):

1. Description of Waste,
2. Date of Waste Generation,
3. Container Identification Number (See attached Labeling Procedures – Facility Environmental Compliance Specialist will assign next number in sequence).
4. EPA Hazardous Waste Codes, if applicable. D008 for hazardous lead levels,
5. Contact Person's Name and Phone Number.

[4]Contact facility Environmental Compliance Specialist for access to waste inventory log. Pertinent information includes the label information, as well as the container description, waste location, and other information.

**General Waste Handling Procedure for Contractors**

Austin Energy facilities are considered the "Generator" of any waste facilities' property, under state and federal waste regulations.

***Waste Generation***

1. Efforts will be made by the Contractor to minimize and/or recycle as much waste as possible. See the attached list of common wastes at the end of this section.

2. When possible, Contractor will use non-hazardous products in performing project tasks requiring the use of chemicals. Contractor will provide an MSDS for each product proposed to be used, whether hazardous or non-hazardous, to the Facility Contact for review and approval. Approval for each product must be received **before** the product is brought on-site.

3. Any unused hazardous or non-hazardous chemicals left over at the completion of the Contractor's project shall be removed from the facility by the Contractor.

***Waste Collection***

1. Contractor will determine what wastes will be generated during the performance of the project they will be working on.

2. Contractor will notify the contractor's Facility Contact and the Facility Environmental Coordinator of the wastes that will be generated.

3. Austin Energy will provide the appropriate containers for the wastes that will be generated by the Contractor during the project.

   a) Different waste streams shall not be mixed.

   b) Hazardous wastes shall never be mixed with non-hazardous waste.

   c) Different types of hazardous wastes shall not be mixed. This includes not mixing paint removed with solvent and any other paint or paint abatement waste.

   d) Aerosol cans shall be segregated from all other wastes. They will be punctured and drained, using the facility can-puncturing unit. The depressurized, empty cans may be placed in the scrap metal bin.

4. Drummed, bagged and boxed[1] wastes will be tightly closed and properly labeled, logged and stored by the Contractor as per Austin Energy waste handling procedures. (See attached Waste labeling and Logging Procedure and the attached Contractor's Waste Log.)

   [1]The only boxes approved for waste collection and disposal are Gaylord boxes and fluorescent lamp boxes, which will be provided by Austin Energy when appropriate.

***Waste Storage***

1. Contractor shall store drummed, bagged and boxed wastes in location(s) approved by the Facility Waste Coordinator.

2. When drums, bags and/or boxes of waste are generated, a Contractor's Waste Log must be completed and turned into the Facility Environmental Coordinator, or to the AE Environmental Field Services Supervisor (Jim Eldred @ 505-7277) if generated at a substation.

   a) This shall be done weekly during projects that extend longer than one (1) month.

   b) This may be done at the end of a project taking one (1) month or less to complete.

3. Incompatible wastes will be stored properly according to local, state and federal waste regulation.

***Waste Classification***

1. Austin Energy will assist the Contractor to determine how the waste(s) generated during the Contractor's project shall be classified. The four (4) regulatory classifications used by Austin Energy are:

   a) Class 2 non-hazardous,

   b) Class 1 non-hazardous,

   c) Hazardous, and

   d) Universal Waste. Universal may or may not also be hazardous.

2. Contractor will provide Austin Energy with information about the waste generated during the Contractor's project to assist with the classification of the wastes.

   a) **TNRCC Waste Code** – if the Facility Environmental Coordinator does not have a TNRCC waste code for a waste stream generated during the Contractor's project, the Facility Environmental Coordinator will submit a request for a waste code to the AE Waste Program Coordinator (Sue Murray at 322-6207) (See attached Waste Service Request form).

      If the AE Environmental Field Services Supervisor does not have a waste code for a waste stream generated at a substation, he will submit a request for a waste code to the AE Waste Program Coordinator using the information provided by the Contractor.

   b) **Disposal Company Waste Profile** – All waste streams must be profiled with the disposal company that will be accepting the waste. If the disposal company that will be taking a waste does not have a profile for that waste, the Facility Environmental Coordinator (facility waste) or the AE Environmental Field Services Supervisor (substation waste) will submit a request for a waste profile to the Austin Energy Waste Program Coordinator (see paragraph above).

   c) **Lab Analysis** – Some wastes must be analyzed for hazardous characteristics or constituents. This might be required for assigning the appropriate waste code, for obtaining the appropriate waste profile, and/or for verifying that a Class 1 or Class 2 non-hazardous waste does not have hazardous characteristics or constituents. The **CONTRACTOR** will contact the Facility Environmental Coordinator (facility waste) and/or the AE Environmental Field Services Supervisor (substation waste) to determine whether or not analysis will be required. If analysis is required, either of the latter two will submit a request for sampling and analysis to the Advanced Analytical Laboratory located at the Holly Power Plant.

      **Bulk Waste Analysis** – Bulk wastes, such as (but not limited to) rust, sandblast grit, and equipment wash water (with or without solvents) have a high potential to fall into any of the three (3) regulatory waste categories listed in 1.a – 1.c) of this section due to heavy metals. If will often be necessary for the **CONTRACTOR** to expect a delay in the disposal of a bulk waste while analysis is being performed.

- Before beginning a task that will result in a bulk waste being containerized in a vehicle, such as a vacuum truck or tanker truck, **CONTRACTOR** shall make arrangements for either the appropriate temporary containerization of the bulk waste while analysis is being performed or for the vehicle to remain o site until the requested analytical result is received back from the lab.

**Except for soils and asphalt that are being excavated at the site, and which are being stockpiled in accordance with local, state and federal regulations, bulk wastes shall not be stored on the ground pending analytical results. Austin Energy will not be responsible for the cost of storage for the bulk wastes if the CONTRACTOR does not comply with the requirement above.**

***Waste Disposal***

1. Austin Energy will dispose of all Class 1 Non-hazardous, Universal and Hazardous waste generated at Austin Energy facilities, except for those generated during large projects in which the Contractor is responsible for a special waste disposal contract to be included as part of the project contract.

2. The Contractor will generally dispose of Class 2 Non-hazardous wastes, in accordance with state and federal waste regulations. Disposal facilities used by the Contractor must be approved by the AE Waste Program Coordinator.

   a) Arrangements for disposal of Class 2 Non-hazardous construction and demolition wastes stored on site in a roll-off obtained by Austin Energy will be made by Austin Energy.

   b) Scrap metal may be recycled through the facility's scrap metal recycling program. Contact the facility Maintenance Superintendent to make arrangements, or the Environmental Field Services Supervisor in the case of substations.

   c) See attached list of Common Wastes for other class 2 non-hazardous waste that can be recycled or that may be put in the facility waste dumpsters.

**CITY OF AUSTIN – AUSTIN ENERGY**

***WASTE LABELING* & LOGGING PROCEDURE**

***For Lead Abatement Projects***

**Labeling containers**

Any container containing waste will be labeled with a description of the waste and a contact name prior to the end of the work day in which it is generated, including those containers that will be added to at a later time.

Containers ready for disposal will be labeled with:

- A Unique I.D. # (see numbering system below)
- A description of the waste.
- The date the waste was generated or the date the container was marked for disposal.
- The weight of the waste in pounds.
- A contact person's name.

All containers will have a unique identification number assigned to them when they are full and/or ready for disposal. The identification will indicate the facility and the year and month the waste was generated or marked for disposal.

1. The identification number will consist of six to eight characters separated with a hyphen:

   a) The first character(s) will indicate the facility location: D = Decker, H = Holly, K = Kramer, SE = St. Elmo, DL = Decker Laydown Yard, ECC = Energy Control Center, J = Justin Ln.

   b) the next characters will be the first letter of each name in the contractor's company name:

      AAB = Austin Abatement Bunch, WCE = We Clean 'Em, Inc.

   c) The next two characters will indicate the year that the container was marked for disposal:

      00 = 2000, 01 = 2001, 02 = 2002

   d) The following two characters will indicate the month that the container was marked for disposal: 01 = January, 02 = February, 03 = March, 04 = April, 05 = May, 06 = June, 07 = July, 08 = August, 09 = September, 10 = October, 11 = November, 12 = December. This determined after the container is full.

   e) The characters to the right of the hyphen indicate the sequential number of the container that was marked in a particular month. Each new month will begin a new numbering sequence that begins with "01".

f) The following example of a waste container identification number indicates the first waste container from a lead abatement project at Decker marked for disposal in January 2000:

For Example: D-AAB-0001-01.

g) The following example of a waste container identification number indicates the first waste container at the Decker Laydown Facility marked for disposal in February 2001:

DL-AAB-0102-01 Label the exteriors of the lid and the side of the container with the facility identification number using an indelible marker, such as a paint pen.

2. Record details about the waste on Contractor's Waste log sheet, such as:

a) Drum identification number

b) Description of contents

c) Accumulation start date:

i) The last date materials were added to the container or...

ii) For **paint & paint-related waste**, use the first date a waste was placed into the container.

d) Container weight

e) Contact person (someone with knowledge of the contents and waste generation process)

f) Unless a waste is positively known to be hazardous or non-hazardous, work with the Plant Environmental Coordinator, or the AE Environmental Field Services Supervisor for Service Center or substation wastes, to determine whether the waste is hazardous or non-hazardous.

i) If the waste is hazardous, affix a HAZARDOUS WASTE label to the container on the exteriors of the lid and the side.

ii) If the waste is non-hazardous, affix a NON-HAZARDOUS WASTE label to the container on the exteriors of the lid and the side.

iii) If the waste is **paint or paint related waste**, including lead-based paint, it is a **"Universal Waste"**. Affix a UNIVERSAL WASTE label to the container on the exteriors of the lid and the side or use a paint pen to write words, "Universal Waste – Paint and Paint-Related Wastes" on the container.

g) Forward a copy of each week's waste log to the Plant Environmental Coordinator, or AE Environmental Field Services Supervisor, the following Monday, or Tuesday if there is a holiday Monday.

It is important to classify waste correctly according to Federal and State waste regulations. If a waste is hazardous and the hazard can be identified through process knowledge, lab analysis is not required. If it is not known whether or not a waste is hazardous, or if the level of a known contaminant in a waste is not known and it could make a difference in the classification, lab analysis must be performed to provide that information for proper classification and disposal. Request laboratory analytical and/or waste characterization:

a) Each week fill out a Waste Services Request Form(s), for the waste generated the previous week and forward it to the Waste Program Coordinator (Sue Murray) at TLC (322-6207) through inter-office mail or fax (322-6280). Provide a contact name, phone number and fax number.

b) Attach an MSDS if a known chemical is part of the waste stream being classified. (example: paint stripper). It is only necessary to submit it once if the same waste stream with that specific chemical in it is reoccurring.

c) If it is known that a hazard could exist in the waste but you are waiting to find out if the levels are high enough to classify it as "hazardous", assume it is until analytical results are received. Keep the container (s) accessible in case labels need to be changed or added when the lab results are back. Make any changes needed to the weekly waste log.

***Note:*** **Even though the paint and paint-related waste is considered a universal waste, it may still be hazardous.** If it is characteristically hazardous, or if it contains a listed hazardous material (such as lead or chromium), it must still be transported and disposed of as a hazardous waste and the Contractor will, therefore, still be required to log the hazards associated with each container to ensure proper transportation and disposal.

**Note: These waste handling requirements may be superseded by the waste documents distributed with the RFP.**

**COMMON WASTES**
**RECYCLE OR DUMPSTER?**

| TYPE OF WASTE | RECYCLING PROGRAM? | DUMPSTER O.K.? | COMMENTS |
|---|---|---|---|
| Aerosol Cans, empty | Scrap metal bin if punctured & drained | Absolutely NOT! | Ask environmental contact for details |
| Aluminum Foil | | Yes | |
| Cardboard | Flatten & stack for pickup by COA recycling truck | Preferably not | Ask environmental contact for place to stack them |
| Concrete waste fromconstruction & demolition. Not oil or solvent contaminated | No | Put in roll-off secured for this material, not dumpster | |
| Containers, empty[1] glass, metal, or plastic of 5 gallons or less | Not presently | Yes, but look at footnote below | |
| Food packaging & food wastes | Not presently. (recycle aluminium cans.) | Yes | |
| Glass | Not presently | Yes. See footnote below | |
| Lubricants of any type | Yes, for used oils | Absolutely Not! | Ask environmental contact for details |
| Oil filters | Yes | Absolutely Not! | Ask environmental contact for details |
| Oily rags | No | Absolutely Not! | Ask environmental contact for details |
| Paper, office | Yes | Prefer recycling | Ask AE contact for details |
| Plastic | Not presently | Yes | |
| Scrap metal, NOT oily metal shavings | Use facility's scrap metal bin | Absolutely Not! | Ask environmental contact about metal shavings |
| Sludges | No | Absolutely Not! | Disposed of under contract |
| Solvents | No | Absolutely Not! | Disposed of under contract |

| | | | |
|---|---|---|---|
| Styrofoam | Not presently | Yes | Ask environmental contact for details |
| Unused chemicals | Not presently | Absolutely Not! | Contractor should remove from site when job complete |
| Wastewaters | Not presently | Absolutely Not! Collect & contain | Disposed of under contract |
| Wood debris, pallets & packing crates | Yes | Preferably not | Ask environmental contract for details |
| Wood debris, treated (poles, railroad ties…) | Yes | Absolutely Not! | Call Jesse Rosales @ reclamation (453-1028) |

[1]Container is empty if following apply:

1. All wastes have been removed using a method appropriate to the container, such as pouring, pumping, aspirating, etc. and
2. No more than one inch of residue remains on the bottom of the container, or
3. No more than 3% by weight of the total capacity remains in the bottom of a container of 110 gallons or less

If you have any questions about whether we have a recycling program for a waste not listed here, or about whether or not something can be put in the dumpster, please contact the facility environmental coordinator.

ATT2

# CONTRACTOR'S WASTE LOG

**For _____(week)**

**Facility:_____ Contractor:_____ Project:_____**

**Contract Name & Phone #:_____**

| Container ID | Description of Waste | Date Generated | Container type/size | Weight | Storage Location | Haz | Non-Haz 1 | Non-Haz 2 |
|---|---|---|---|---|---|---|---|---|
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**Forward copy to facility waste manager weekly.**

DKC0040

**WORKER PROTECTION** **SECTION 01700**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

SUMMARY:
This Section describes clothing, equipment and procedures for protection of workers during lead abatement activities.

Refer to Section 01710 for Respiratory Protection.

WORKER TRAINING:
Provide worker training for workers on the Project in accordance with applicable regulations. Worker training shall be maintained current for the Project Duration. Firm and workers shall be licensed by the Texas Department of State Health Services or QP2 certified by the Steel Structure Painting Council (SSPC).

MEDICAL EXAMINATIONS:
Provide medical examinations for workers on the Project in accordance with applicable regulations, including OSHA requirements as set forth in 29 CFR 1926. Worker medical examinations shall be maintained current for the Project Duration.

SUBMITTALS:

General: Submit the following documentation to the **CONSULTANT** for review. Submit in a timely fashion to allow completed review of documentation prior to start of Work. Workers whose documentation is un-reviewed, incomplete, expired or otherwise unsatisfactory as determined by the **CONSULTANT** will not be permitted to engage in lead abatement activities on the Project. If a document expires during the course of the Project, the affected worker(s) will not be permitted to engage in lead abatement activities on the Project until a satisfactory current document has been submitted and reviewed by the **CONSULTANT**.

List of Workers: Submit a list of **CONTRACTOR**'s personnel (typewritten or neatly printed) for the Project. Only **CONTRACTOR**'s personnel on the list will be permitted on the Project site. Post a copy of the list at the entry to the Work Area. Update the list on a daily basis.

Certificate of Worker's Acknowledgement: Submit an original signed copy of the Certificate of Worker's Acknowledgement, found at the end of this section, for each person on the List of Workers.

Worker Training Certificate: Submit evidence of required Worker Training.

Medical Surveillance and Medical Removal Records:

Submit copy of worker records required under OSHA regulation 29 CFR 1926.62.

Submit a true and current copy of written medical opinions for each worker. Physician's written opinion from examining physician shall include the following:

Whether worker has any detected medical conditions that would place the worker at an increased risk of material impairment of the worker's health from exposure to lead.

Any recommended special protective measures to be provided to the worker or limitations to be placed upon the worker's exposure to lead.

Any recommended limitation upon the worker's use of respirators, including a determination of whether the employee can wear a powered air purifying respirator if a physician determines that the worker cannot wear a negative pressure respirator.

The results of the blood lead determinations.

Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from lead exposure.

Respiratory Fit Test Certificate: Submit evidence of Respiratory Fit Test for the type of respirator proposed for Work, and in accordance with applicable regulations.

## PART 2 - PRODUCTS

### PROTECTIVE CLOTHING AND EQUIPMENT:

General: Provide protective clothing and equipment as required by applicable regulations for anticipated type of Work.

Coveralls: Provide disposable full-body coveralls, foot covers, and disposable head covers of polyolefin or polypropylene. Require that the above be worn continuously by personnel in the Work Area. Provide a sufficient number for required changes for workers, the **CONSULTANT** and visitors in the Work Area. Non-disposable or cloth protectives will not be permitted.

Gloves: Provide durable waterproof work gloves to workers and require that gloves be worn continuously by personnel in the Work Area. Do not remove gloves from work area; dispose as contaminated waste.

Boots and Shoes: Provide waterproof boots or shoes to be used in the Work Area. Provide boots or shoes with non-skid soles and hard toes.

Hard Hats: Provide head protectives (hard hats) for workers as applicable for anticipated type of Work. Provide four (4) spare hard hats for use by the **CONSULTANT** and visitors. Label hats with same warning labels as used on disposal bags. Require hard hats to be worn when Work is in progress. Provide hard hats with plastic strap style of suspension. Require hats to remain in the Work Area throughout the Work. Decontaminate prior to removing from Work Area or dispose of hard hats as contaminated waste.

Goggles: Provide eye protectives (goggles) for workers involved in chipping, scraping, spraying, or other activity which may potentially cause eye injury.

PART 3 - EXECUTION

MEDICAL PROGRAMS:

Institute a Medical Surveillance Program in conformance with OSHA 29 CFR 1926.62. The program shall apply to those workers who are or may be exposed to lead above the Action Level for more than 30 days per year. The following is a brief summary of portions of the medical surveillance requirements and does not relieve the **CONTRACTOR** from his responsibility to comply with the regulation in its entirety.

Schedule for biological monitoring of blood lead and zinc protoporphyrin levels:

- at least every six months for workers exposed above the Action Level for more than 30 days per year.
- at least every two months for those workers whose last blood lead level was at or above 40 micrograms of lead per 100 grams of whole blood (40μg/100g). These workers shall be notified in writing within five working days of receipt of test results.

Schedule for medical examinations and consultations:

- at least annually for those workers whose blood sampling test, conducted any time within the twelve preceding months, indicated a blood lead level above 40μg/100g.
- prior to a worker's first-time assignment to an area where exposure to airborne lead concentrations are at or above the Action Level.
- as soon as possible after worker provides notification, that he/she has developed lead related symptoms, that he/she desires medical advice, or that he/she demonstrates difficulty in breathing during a respirator fit test or during use of a respirator on the job, and as medically appropriate for removed or medically limited workers.

Institute a Medical Removal Protection Program in conformance with OSHA 29 CFR 1926.62, for those workers who must be removed from lead exposure due to elevated blood lead levels or due to a final medical determination. The program shall include removal protection benefits as outlined in the regulation.

WORKER TRAINING:

Train workers in accordance OSHA regulation 29 CFR 1910.1025. Include but do not limit the topics covered in the course to the following:

The review of applicable regulations including the contents of OSHA Lead Standards in 29 CFR 1910.1025, 1926.62 and their appendices.

The specific nature of the operations which could result in exposure to lead above the action level.

The purpose, proper selection, fitting, use, and limitation of respirators.

The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to

lead (with particular attention to the adverse reproductive effects on both males and females).

The engineering controls and work practices associated with the worker's job assignment.

The contents of any compliance plan in effect.

Instructions to workers that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.

Include in the training program, the importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:

- Engineering controls
- Respirators
- Hygiene facilities
- Air monitoring, personal and area
- Work Practices including hands-on or on-job training
- Housekeeping procedures
- Protective clothing and equipment
- Ventilation system

WORKER PROTECTION:

Provide for protection of workers and other authorized personnel on the Project site as required by applicable regulations for anticipated type of Work.

The following procedures are to be considered minimum regardless of air monitoring results within the Work Area.

Require that protective clothing and equipment be worn continuously in Work Area. Replace damaged or torn items immediately.

ENTERING WORK AREA:

Each time Work Area is entered, remove street clothes in the Changing Room of the Personnel Decontamination Unit and don new disposable coverall, head and foot covers and gloves. Tape gloves to the sleeves of coveralls.

Fit proper respiratory protection (respirator).

Proceed through Shower Room to Equipment Room. Don work boots or shoes, hard hat, goggles, etc in Equipment Room.

Proceed to Containment area.

WITHIN WORK AREA:

Workers shall not eat, drink, smoke, chew gum or tobacco in the Work Area.

Workers shall not remove protective clothing or equipment within the Work Area.

EXITING WORK AREA:

Decontamination Procedures: Require personnel to adhere to the following decontamination procedures when exiting the Work Area.

Remove disposable clothing and equipment (except respirator) in the Equipment Room.

Proceed to Shower Room still wearing respirator. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid lead contamination while showering.

Thoroughly wet body including hair and face.

If using PAPR, exercise care to prevent water from entering canisters, blower unit and battery pack.

If using half or full face cartridge type respirator (non-powered), exercise care to prevent water from entering cartridges at this point.

With respirator remaining in place, thoroughly wash body, hair, and parts of the respirator with soap/shampoo.

Carefully wash seal between face and respirator and under straps.

Take a deep breath, hold and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator away from face before breathing.

Carefully wash respirator inside and out. Dispose of wet filters as contaminated waste.

If using PAPR: Shut down in the following sequence; first, cap inlets to filter cartridges; then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Use caution to prevent water entering the battery pack.

Rinse body and respirator thoroughly.

Rinse Shower Room walls and floor prior to exit.

Proceed from shower to Changing Room and change into street clothes or into new disposable work items.

**---------- END OF SECTION ----------**

CERTIFICATE OF WORKER'S ACKNOWLEDGEMENT

PROJECT NAME _____ DATE _____

PROJECT ADDRESS

_____

REMEDIATION _____ CONTRACTOR'S NAME _____

WORKING WITH LEAD (PB) CAN BE DANGEROUS. INHALING AND INGESTING LEAD (PB) DUST CAN CAUSE AN INCREASE IN BLOOD LEAD (PB) LEVELS WHICH CAN LEAD TO ADVERSE HEALTH EFFECTS SUCH AS KIDNEY DAMAGE, ELEVATED BLOOD PRESSURE OR INFERTILITY.

Your employer's contract with the Owner for the above project requires that you receive the following at no cost to you: 1) you are supplied with the proper respirator and trained in its use; 2) you are trained in safe work practices and in the use of the equipment found on the job; and 3) you receive a medical examination. By signing this certification, you are assuring the Owner that your employer has met these obligations.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators and informed of the type respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: I have been trained in the dangers inherent in handling lead (Pb), breathing and ingesting lead (Pb) dust, in proper work procedures, and personal and area protective measures. The topics covered in the course must have included the following:

Possible routes of exposure to lead (Pb)
Health hazards associated with lead (Pb)
Respiratory protection
Use of protective equipment
Work practices including hands on or on-the-job training Personal decontamination procedures
Health and safety considerations

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months that was paid for by my employer. This examination included: health history, physical examination, a blood pressure measurement, pulmonary function test which may have included an evaluation of a chest x-ray, and blood sample and analysis for lead (Pb).

By signing this document you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer, the Remediation Contractor.

Signature _____ Social Security No _____

Printed Name _____ Witness _____

**CERTIFICADO DE RECONOCIMIENTO PARA LOS TRABAJADORES**

NOMBRE DEL PROYECTO _____ FECHA _____

DIRECCION DEL PROYECTO _____

NOMBRE DEL CONTRATISTA _____

TRABAJAR CON PLOMO PUEDE SER PELIGROSO. INHALAR 0 INGERIR POLVO DE PLOMO PUEDE CAUSAR UN INCREMENTO DEL NIVEL DE PLOMO EN LA SA@GRE, LO CUAL PUEDE OCACIONAR EFECTOS ADVERSOS A LA SALUD, TALES COMO DANOS A LOS RINONES, ALTA PRESION SANGUINEA, 0 INFERTILIDAD.

El contrato de trabajo de tu patron con el dueho de este projecto requiere que recibas lo sigiente sir costo a ti: 1) Se te debe proporcionar un respirador apropiado y se te ensehe como usarlo; 2) Tu debas ser entrenado para trabajar con medidas de seguridad y se te ensehe a usar el equipo y herramienta (lue se requiere para trabajar; 3) Que seas examinado por un medico. Al firmar este certificado tu estas asegurando al dueho del projecto que tus patrones ya cumplieron con estas obligaciones

PROTECCION RESPIRATORIA: Yo he sido entrenado en el use apropiado de respiradores, y ha sido informado del tipo de respirador que debe ser usado en este projecto. Yo tengo una copia escr ta del manual de proteccion respiratoria proporcionado por mis patroness Yo he sido equipado sin costo qguno para me con el respirador que debe ser usado en este projecto.

**CURSO DE ENTRENAMIENTO: Yo fui entrenado en lo saber los lead de manejar, inhaler y respirar el polvo de plomo, y en los procedemientos de trabajo apropiado, asi como en las medidas de proteccion personal y del area de trabajo. Los temas cubridos en este curso deben de incluir lo siguiente:**

Riesgos para la salud relacionados con el plomo Proteccion respiratoria
Uso del equipo de proteccion
Practica de trabajo, incluyendo el entrenamiento para el trabajo Procedimentos para desinfeccion personal
Consideraciones con respecto a salud y seguridad

EXAMEN MEDICO: Yo recibi un examen medico sin ningun costo, durante los ultimos 12 meses. Este examen encluio: historia de salud, examen fisico, medicion de la presion sanguinea, examen de la funcion pulmonar, y muestra de sangre para el analisis del contenido de plomo.

Al firmar este documents, Ud. esta reconociendo que el Propietario del edificio para el cual Ud. va a trabajar, le a avisado de sus derechos de proteccion y entrenamiento relativo con su empleador, el Constratista.

Signature _____ Social Security No _____

Printed Name _____ Witness _____

**RESPIRATORY PROTECTION** **SECTION 01710**

PART 1 - GENERAL

RELATED DOCUMENTS:
Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to the Work of this section.

SUMMARY:
This Section describes respiratory protection during lead abatement activities.

STANDARDS:

Comply with the following as applicable:

| | |
|---|---|
| OSHA | U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1001 and Section 1910.134, 29 CFR 1926. |
| CGA | Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air". |
| CSA | Canadian Standard Association, Rexdal, Ontario, Standard Z180.1-1978, "Compressed Breathing Air". |
| ANSI | American National Standard Practices for Respiratory Protection, ANSI Z88.2-1980. |
| NIOSH | National Institute for Occupational Safety and Health |
| MSHA | Mine Safety and Health Administration |

PART 2 - PRODUCTS

AIR PURIFYING RESPIRATORS:

Respirator Bodies: Provide half-face or full-face type respirators; negative pressure or powered (PAPR). Equip full-face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees fahrenheit.

Provide an extra battery pack for each PAPR.

Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color-coded in accordance with ANSI Z228.2 (1980).

In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In such case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

Non-Permitted Respirators: Do not use single use, disposable or quarter face respirators.

SUPPLIED AIR RESPIRATOR SYSTEMS (TYPE "C" & TYPE "CE"):

General: Provide equipment capable of producing air of quality and volume required as applied to the Project conditions and crew size.

Air Quality: Provide air used for breathing in Type "C" supplied air respiratory systems that meets or exceeds standards set for C.G.A. type 1 (Gaseous Air) Grade D.

Face piece and Hose: Provide full Face piece and hose by same manufacturer, certified by NIOSH/MSHA as an approved Type "C" respirator assembly operating in pressure demand mode with a positive pressure Face piece.

Auxiliary Backup System: In atmospheres which contain sufficient oxygen (greater than or equal to 19.5% oxygen), provide a pressure-demand full Face piece supplied air respirator equipped with an emergency backup HEPA filter.

Escape Air Supply: In atmospheres which are oxygen deficient (less than 19.5% oxygen), provide a pressure-demand full Face piece supplied air respirator incorporating an auxiliary self-contained breathing apparatus (SCBA) which automatically maintains an uninterrupted air supply in pressure demand mode with a positive pressure Face piece.

Backup Air Supply: Provide a reservoir of compressed air located outside the Work Area which will automatically maintain a continuous uninterruptable source of air automatically available to each connected Face piece and hose assembly in the event of compressor shut-down, contamination of air delivered by compressor, power loss or other failure. Provide sufficient capacity in the backup air supply to allow a minimum escape time of one-half hour times the number of connections available to the Work Area. Air requirement at each connection is the air requirement of the respirators in use plus the air requirement of an average sized adult male engaged in moderately strenuous activity.

Warning Device: Provide a warning device that will operate independently of the building's power supply. Locate so that alarm is clearly audible throughout the Work Area and at the compressor with a volume above the noise level produced by equipment and work procedures in use. Connect alarm to warn of:

Compressor shut-down or other fault requiring use of backup air supply,

Carbon Monoxide (CO) levels in excess of 10 PPM/V.

Carbon Monoxide (CO) Monitor: Continuously monitor and record on a strip chart recorder Carbon Monoxide (CO) levels. Place monitors in the air line between compressor and backup air supply and between backup air supply and workers. Connect monitors so that they also sound an alarm as indicated under "Warning Devices".

Compressor Shut-Down: Interconnect monitors, alarms and compressor so that compressor is automatically

shut down and the alarms sounded if any of the following occur:

Carbon Monoxide (CO) concentrations exceed 10 PPM/V in the air line between the filter bank and backup air supply.

Compressor temperature exceeds normal operating range.

Compressor Motor: Provide a compressor driven by an electric motor. Insure that electrical supply available is adequate to energize motor.

If building power supply is inadequate or as other factors may necessitate, provide gasoline or diesel compressor motor as follows.

Compressor Location: Locate compressor outside of building in location that will not impede access to the building, and that will not cause a nuisance by virtue of noise or fumes to occupied portions of the building.

Air Intake: Locate air intake remotely from source or automobile exhaust or exhaust from motors, or buildings.

After Cooler: Provide an after cooler at entry to filter system which is capable of reducing temperatures to outside ambient air temperatures.

SELF-CONTAINED BREATHING APPARATUS (SCBA):
Configure system to permit the recharging of ½ hour 6220 PSI SCBA cylinders.

## PART 3 - EXECUTION

GENERAL:

Respiratory Protection Program: Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection" and OSHA 29 CFR 1910 and 1926, and other applicable regulations.

Instruct and train workers in proper care and use of respiratory protection equipment

Require that respiratory protection be used in the Work Area from the start of Work which may cause airborne lead until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber concentration encountered and anticipated or as required for other toxic or oxygen-deficient situations encountered.

Require that respiratory protection be used during the possibility of disturbance of lead-containing materials whether intentional or accidental.

Regardless of Airborne Fiber Concentrations: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.

RESPIRATORY PROTECTION FACTOR:
Use the following respiratory protection factors in determining the degree of protection offered by the indicated respirator type between air inside and outside the respirator.

| RESPIRATOR TYPE | AIRBORNE LEAD CONCENTRATION | PROTECTION FACTOR |
|---|---|---|
| Air purifying:<br>Negative pressure respirator<br>High efficiency filter<br>Half Face Piece | 500 ug/m$^3$ or less | 10 |
| Powered-air purifying (PAPR):<br>Positive pressure respirator<br>High efficiency filter<br>Loose fitting hood or helmet | 1,250 ug/m$^3$ or less | 25 |
| Powered-air purifying (PAPR):<br>Positive pressure respirator<br>High efficiency filter<br>Full Face Piece | 2,500 ug/m$^3$ or less | 50 |
| Type C supplied air:<br>Positive pressure respirator<br>Pressure demand<br>Half Face Piece | 50,000 ug/m$^3$ or less | 1000 |
| Type CE supplied air:<br>Positive pressure<br>Full body suit w/hood | 50,000 ug/m$^3$ or less | 1000 |
| Type C supplied air:<br>Positive pressure respirator<br>Pressure demand<br>Full Face Piece | 100,000 ug/m$^3$ or less | 2000 |
| Self-contained breathing apparatus (SCBA):<br>Positive pressure respirator<br>Pressure demand<br>Full Face Piece | Over 100,000 ug/m$^3$ | Over 2000 |

MINIMUM TYPE OF RESPIRATORY PROTECTION REQUIRED:

Provide at a minimum the following respiratory protection unless otherwise indicated:

*Prep Work, Pre-cleaning, Temporary Containment construction Work*: Utilize half-face with appropriate eye protection or full face negative pressure, air-purifying respirator with high efficiency filters.

***Other Removal Work:*** **Utilize full-face, powered air-purifying respirator (PAPR) with high efficiency filters.**

***Abrasive Blasting Removal Work*: Utilize Type CE abrasive blasting respirator operated in a positive-**

**pressure mode.**

**NOTE: OSHA approved hood respirator should be utilized during sand blasting with silica sand.**

SUPPLIED AIR RESPIRATOR SYSTEMS (TYPE "C" & TYPE "CE"):

General: Carefully set up and control supplied air respirator systems to prevent hazards for workers due to difficulty of handling the attached hoses, including on scaffolding and other equipment.

Air Systems Monitor: Monitor the air system operation including compressor operation, filter system operation, backup air capacity and warning and monitoring devices continuously during system operation.

AIR PURIFYING RESPIRATORS:

General: Store respirators and filters in the Changing Room. Store respirators in individual, clean plastic bags. Maintain a sufficient quantity of respirator filters for the Work.

Half or Full Face Negative Pressure Respirators: Require that filters be discarded and that new filters be installed each time a worker exits and re-enters the Work Area.

Powered Air Purifying Respirators (PAPR): Require that filters be discarded and that new filters be installed when flow through the face-piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filters be replaced after forty (40) hours of use. Maintain one spare battery charged or being charged for each PAPR provided.

**---------- END OF SECTION ----------**