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USACE / NAVFAC / AFCEC / NASA	**UFGS-02 83 00 (November 2018)**

Preparing Activity: NAVFAC	**Superseding**
	UFGS-02 82 33.13 20 (August 2011)
	UFGS-02 83 13.00 20 (August 2011)
	UFGS-02 83 19.13 10 (February 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021

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SECTION 02 83 00

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11/18

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SECTION 02 83 00

LEAD REMEDIATION
11/18

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NOTE: This guide specification covers the requirements for protection of workers, disposal of lead, cadmium and chromium painted material, abatement of lead based paint hazards in target housing and child occupied facilities and limiting occupational and environmental exposure to lead-based paint or paint with lead (LBP/PWL).

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
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NOTE: This guide specification also provides guidelines/recommendations for cleanup of lead, cadmium and chromium on construction projects impacting material containing lead, cadmium and chromium or lead based paint.
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NOTE: Obtain project specific information and appropriate sampling of Paint with Lead (PWL) or Material Containing Lead (MCL) that will be removed or disturbed.

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NOTE: This guide specification can be used in projects where LBP/PWL must be removed/controlled (including paint film stabilization) or lead-based paint hazards abated as defined by Public Law 102-550 Title X - Residential Lead-Based Paint Hazard Reduction Act of 1992. Local requirements may be substantially restrictive for the conduction of LBP or LBP hazard abatement projects.

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NOTE: This guide specification should be used with all of the requirements of 40 CFR 745 (or state/local requirements in states with authorized programs) for projects involving lead-based paint hazard abatement in target housing and child occupied facilities being transferred or resolving facility-related work due to an occupant child with an elevated blood lead. In these projects, it is required that the specification editor has appropriate training regarding lead-based paint activities. Certification as a project designer per 40 CFR 745 is required.

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NOTE: The classification of the lead-based paint or paint with lead as hazardous waste must be performed in accordance with 40 CFR 261, and in the design phase of the project. This classification is prerequisite to the requirement of special handling, storage, and disposal according to Federal, state and local hazardous waste management regulations.

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NOTE: When historic preservation work will disturb PWL, refer to the Secretary of the Interior's Standards for the Treatment of Historic Properties and Brief 37, "Appropriate Methods for Reducing Lead-Paint Hazards in Historic Housing" as appropriate.

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NOTE: The work may involve a historic property. The designer must coordinate review of the proposed work with the appropriate cultural resources manager (CRM) and cultural resource laws and regulations, as part of the environmental review and permitting process. Consultation with stakeholders, including the state historic preservation office, may be required, and work involving historic properties will likely be required to confirm to the Secretary of the Interior's Standards for the Treatment of Historic Properties (usually at the REHABILITATION

level). See https://www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm.

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NOTE: Projects involving housing improvement, maintenance, or repair are not considered a lead-based paint hazard abatement action even if the effect of the work removes (or reduces) lead exposure potentials to the occupants. However, appropriate precautions for protecting occupants and leaving the housing clean (clearance) after concluding any work disturbing lead must be considered. Specific training and certification requirements (40 CFR 745 or authorized state program requirements) may not be necessary for all projects. However, it is strongly recommended that the specification editor have appropriate training regarding lead.

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NOTE: Projects that involve cutting, sawing, sanding, scraping, needle gunning, abrasive blasting, high temperature removal, of lead-based paint/paint with lead and paints containing cadmium and chromium materials may result in exposures in excess of OSHA limits. Therefore, personal protective equipment should be used and controls implemented. Institute worker protection controls as indicated in 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and herein. Also, some work practices are prohibited for LBP/LBP hazard abatement (e.g., machine sanding, abrasive blasting) unless used with HEPA exhaust controls (see 40 CFR 745.227).

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NOTE: To assure protection of workers and proper disposal of lead, cadmium and chromium based paint, this guide specification is to be used together with Section 01 35 26 GOVERNMENT SAFETY REQUIREMENTS.

This guide specification is not to be used for removal of lead-based paint from hydraulic structures, steel structures, or other similar structures. For these types of structures, the designer should use Section 09 97 02 PAINTING: HYDRAULIC STRUCTURES.

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PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide

specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.
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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP Z9.2	(2018) Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems

ASTM INTERNATIONAL (ASTM)

ASTM E1613	(2012) Standard Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectrometry (GFAAS) Techniques
ASTM E1644	(2017) Standard Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead
ASTM E1726	(2020) Standard Practice for Preparation of Soil Samples by Hotplate Digestion for Subsequent Lead Analysis
ASTM E1727	(2016) Standard Practice for Field Collection of Soil Samples for Subsequent Lead Determination
ASTM E1728/E1728M	(2020) Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination
ASTM E1792	(2020) Standard Specification for Wipe Sampling Materials for Lead in Surface Dust

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(2019) Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 6780	(1995; Errata Aug 1996;Rev Ch. 7 - 1997) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.21	Safety Training and Education
29 CFR 1926.33	Access to Employee Exposure and Medical Records
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.59	Hazard Communication
29 CFR 1926.62	Lead
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
29 CFR 1926.103	Respiratory Protection
29 CFR 1926.1126	Chromium
29 CFR 1926.1127	Cadmium
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions

40 CFR 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 178	Specifications for Packagings

U.S. NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

ND OPNAVINST 5100.23	(2005; Rev G) Navy Occupational Safety and Health (NAVOSH) Program Manual

UNDERWRITERS LABORATORIES (UL)

UL 586	(2009; Reprint Dec 2017) UL Standard for Safety High-Efficiency Particulate, Air Filter Units

1.2 DEFINITIONS

1.2.1 Abatement

Measures defined in 40 CFR 745, Section 223, designed to permanently eliminate lead-based paint hazards.

1.2.2 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period; to an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air averaged over an 8-hour period; to an airborne concentration of chromium (VI) of 2.5 micrograms per cubic meter of air averaged over an 8-hour period.

1.2.3 Area Sampling

Sampling of lead, cadmium, chromium concentrations within the lead, cadmium, chromium control area and inside the physical boundaries which is representative of the airborne lead, cadmium, chromium concentrations but is not collected in the breathing zone of personnel (approximately 1.5 to 1.8 meters 5 to 6 feet above the floor).

1.2.4 Cadmium Permissible Exposure Limit (PEL)

Five micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.1127. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 40/No. hrs worked per day

1.2.5 Certified Industrial Hygienist (CIH)

As used in this section refers to a person retained by the Contractor who is certified as an industrial hygienist and who is trained in the recognition and control of lead, cadmium and chromium hazards in accordance with current federal, State, and local regulations. CIH must

be certified for comprehensive practice by the American Board of Industrial Hygiene. The Certified Industrial Hygienist must be independent of the Contractor and must have no employee or employer relationship which could constitute a conflict of interest.

1.2.6 Child-Occupied Facility

Real property which is a building or portion of a building constructed prior to 1978 visited regularly by the same child, six-years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3-hours, and the combined annual visits last at least 60-hours. Child-occupied facilities include but are not limited to, day-care centers, preschools and kindergarten classrooms.

1.2.7 Chromium Permissible Exposure Limit (PEL)

Five micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.1126. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 40/No. hrs worked per day

1.2.8 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead, cadmium and chromium hazards in accordance with current federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead, cadmium and chromium hazard. The Contractor may provide more than one CP as required to supervise and monitor the work. The CP must be a Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene or a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals or a licensed lead-based paint abatement Supervisor/Project Designer in the State of [_____].

1.2.9 Contaminated Room

Refers to a room for removal of contaminated personal protective equipment (PPE).

1.2.10 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.2.11 Deleading

Activities conducted by a person who offers to eliminate lead-based paint or lead-based paint hazards or paints containing cadmium/chromium or to plan such activities in commercial buildings, bridges or other structures.

1.2.12 Eight-Hour Time Weighted Average (TWA)

Airborne concentration of lead, cadmium, chromium to which an employee is exposed, averaged over an 8-hour workday as indicated in 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

1.2.13 High Efficiency Particulate Air (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead, cadmium, chromiumcontaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.

1.2.14 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds. The use of the term Lead in this section also refers to paints which contain detectable concentrations of Cadmium and Chromium. For the purposes of the section lead-based paint (LBP) and paint with lead (PWL) also contains cadmium and chromium.

1.2.15 Lead-Based Paint (LBP)

Paint or other surface coating that contains lead in excess of 1.0 milligrams per centimeter squared or 0.5 percent by weight.

1.2.16 Lead-Based Paint Activities

In the case of target housing or child occupied facilities, lead-based paint activities include; a lead-based paint inspection, a risk assessment, or abatement of lead-based paint hazards.

1.2.17 Lead-Based Paint Hazards

Paint-lead hazard, dust-lead hazard or soil-lead hazard as identified in 40 CFR 745, Section 65. Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, lead-based paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects.

1.2.18 Lead, Cadmium, Chromium Control Area

A system[of control methods] to prevent the spread of lead, cadmium, chromium dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.

1.2.19 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than 8-hours in a work day, determine the PEL by the following formula:

PEL (micrograms/cubic meter of air) = 400/No. hrs worked per day

1.2.20 Material Containing Lead/Paint with Lead (MCL/PWL)

Any material, including paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section does not apply if no detectable levels of lead are found using a quantitative method for analyzing paint or MCL using laboratory instruments with specified limits of detection (usually 0.01 percent). An

X-Ray Fluorescence (XRF) instrument is not considered a valid test method.

1.2.21 Personal Sampling

Sampling of airborne lead, cadmium, chromium concentrations within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127. Samples must be representative of the employees' work tasks. Breathing zone must be considered an area within a hemisphere, forward of the shoulders, with a radius of 150 to 225 mm 6 to 9 inches and centered at the nose or mouth of an employee.

1.2.22 Physical Boundary

Area physically roped or partitioned off around lead, cadmium, chromium control area to limit unauthorized entry of personnel.

1.2.23 Target Housing

Residential real property which is housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6-years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any zero bedroom dwelling.

1.3 DESCRIPTION

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NOTE: Specify the construction activities that will impact lead, cadmium and chromium based paint or lead containing material. Show the location of MCL/PWL impacted construction activities on the contract drawings and indicate its condition (well adhered sheets or wrappings, solid, aggregates, bricks or blocks, powdered, liquid, sludge). Example activities include: preparing surfaces for painting, saw cutting through painted material, sanding painted surfaces, scabbling painted or otherwise leaded concrete surfaces, blast cleaning painted surfaces, torch cutting through painted metal.

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Construction activities impacting PWL or material containing lead, cadmium, chromium which are covered by this specification include the demolition or removal of material containing lead, cadmium, chromium in [_____] condition, located [_____] and as indicated on the drawings. [_____] The work covered by this section includes work tasks and the precautions specified in this section for the protection of building occupants and the environment during and after the performance of the hazard abatement activities.

1.3.1 Protection of Existing Areas To Remain

Project work including, but not limited to, lead, cadmium, chromium hazard abatement work, storage, transportation, and disposal must be performed without damaging or contaminating adjacent work and areas. Where such work or areas are damaged or contaminated, restore work and areas to the original condition.

1.3.2 Coordination with Other Work

Coordinate with work being performed in adjacent areas to ensure there are no exposure issues. Explain coordination procedures in the Lead, Cadmium, Chromium Compliance Plan and describe how the Contractor will prevent lead, cadmium and chromium exposure to other contractors and Government personnel performing work unrelated to lead, cadmium and chromium activities.

1.3.3 Sampling and Analysis

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NOTE: Specify the sampling and analysis necessary to characterize effectiveness of equipment and procedures to prevent migration of contamination while lead, cadmium and chromium and lead hazard abatement activities are performed and to assure clearance/cleanup requirements have been achieved.

Select from the methods below to specify the sampling and analytical requirements for this project.
****

Submit a log of the analytical results from sampling conducted during the abatement. Keep the log of results current with project activities and brief the results to the Contracting Officer as analytical results are reported.

1.3.3.1 Dust Wipe Materials, Sampling and Analysis

Sampling must conform to [[ASTM E1728/E1728M][ASTM E1792]].[Analysis must conform to ASTM E1613 and ASTM E1644.]

1.3.3.2 Soil Sampling and Analysis

Sampling must conform to ASTM E1727.[Analysis must conform to ASTM E1613 and ASTM E1726.]

1.3.3.3 Clearance Monitoring

****
NOTE: Review 40 CFR 745 (e)(8)(v)(A), (B) and (C) to determine the quantity and location of clearance samples for target housing, child occupied facilities.
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a. Collect dust wipe samples inside the lead, cadmium and chromium hazard control area after the final visual inspection in the quantities and at the locations specified.

   (1) Floors [_____].
   (2) Interior Window Sills [_____].
   (3) Window Troughs [_____].

b. Collect exterior bare soil samples inside the lead, cadmium and chromium hazard control area after the final visual inspection in the

quantities and at the locations specified.

(1) Near the building foundation [_____].
(2) Nearby Play areas [_____].

1.3.4 Clearance Requirements

****
NOTE: Clearance criteria are as follows:

Target housing and child occupied facilities.

a) Building Interior:

Floors - 40 micrograms/square foot.
Interior Window Sills - 250 micrograms/square foot.
Window Troughs - 800 micrograms/square foot.

b) Building Exterior:

Bare soils in play areas used by children under the age of 6 - 400 mg/kg.
Bare soils, all other areas - 1200 mg/kg

It is recommended that the designer check with the project customer and state regulators to assure that the clearance criteria in this note are consistent with customer needs and state specific requirements.
****

Target housing and child occupied facilities clearance levels.

(1) Floors [_____].
(2) Interior Window Sills [_____].
(3) Window Troughs [_____].
(4) Bare soils in play areas accessible by children [_____].
(5) Bare soils in all other areas [_____].

1.4 SUBMITTALS

****
NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for

Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Competent Person Qualifications; G[, [_____]]

Training Certification; G[, [_____]]

Occupational and Environmental Assessment Data Report; G[, [_____]]

Medical Examinations; G[, [_____]]

Lead, Cadmium, Chromium Waste Management Plan; G[, [_____]]

Licenses, Permits and Notifications; G[, [_____]]

Occupant Protection Plan; G[, [_____]]

Lead, Cadmium, Chromium Compliance Plan; G[, [_____]]

[Initial Sample Results; G[, [_____]]

] Written Evidence of TSD Approval; G[, [_____]]

SD-03 Product Data

Respirators; G[, [_____]]

Vacuum Filters; G[, [_____]]

Negative Air Pressure System; G[, [_____]]

Materials and Equipment; G[, [_____]]

Expendable Supplies; G[, [_____]]

Local Exhaust Equipment; G[, [_____]]

Pressure Differential Automatic Recording Instrument; G[, [_____]]

Pressure Differential Log; G[, [_____]]

SD-06 Test Reports

Sampling and Analysis; G[, [_____]]

Occupational and Environmental Assessment Data Report; G[, [_____]]

Sampling Results; G[, [_____]]

Pressure Differential Recordings For Local Exhaust System; G[, [_____]]

SD-07 Certificates

Testing Laboratory; G[, [_____]]

[Third Party Consultant Qualifications; G[, [_____]]

][Occupant Notification; G[, [_____]]

][Notification of the Commencement of [LBP] Hazard Abatement; G[, [_____]]

]

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NOTE: See Criteria Notes in paragraphs AIR AND WIPE SAMPLING and CLEARANCE CERTIFICATION to determine whether these items should be included in the project.
****

Clearance Certification; G[, [_____]]

SD-11 Closeout Submittals

Hazardous Waste Manifest; G[, [_____]]

[Turn-In Documents or Weight Tickets; G[, [_____]]

]1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 Competent Person (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph COMPETENT PERSON (CP) RESPONSIBILITIES. Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62), Chromium standard (29 CFR 1926.1126), Cadmium standard (29 CFR 1926.1127) which shows ability to assess occupational and environmental exposure to lead, cadmium, chromium; experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Demonstrate a minimum of [3][5][_____] years experience implementing OSHA's Lead in Construction

standard (29 CFR 1926.62), Chromium standard (29 CFR 1926.1126), and Cadmium standard (29 CFR 1926.1127). Submit proper documentation that the CP is trained [and licensed][and certified] in accordance with federal, State [_____] and local laws.[The competent person must be a licensed lead-based paint abatement Supervisor/Project Designer in the State of [_____]].

1.5.1.2 Training Certification

****
NOTE: State or local regulations may consider lead, cadmium and chromium, LBP/PWL or MCL removal work as "lead based paint hazard reduction activities" even if the work does not include lead based paint. The training provider may be required to be "accredited" by either the State or the United States Environmental Protection Agency (USEPA).
****

Submit a certificate for each worker and supervisor, signed and dated by the[accredited] training provider, stating that the employee has received the required lead, cadmium and chromium training specified in 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 [40 CFR 745][and is certified to perform or supervise deleading, lead removal or demolition activities][in the State of [_____]].

1.5.1.3 Testing Laboratory

Submit the name, address, and telephone number of the testing laboratory selected to perform the air[soil][and wipe] analysis, testing, and reporting of airborne concentrations of lead, cadmium and chromium. Use a laboratory participating in the EPA National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis. Laboratories selected to perform blood lead analysis must be OSHA approved.

[1.5.1.4 Third Party Consultant Qualifications

****
NOTE: See Criteria Notes in paragraphs AIR AND WIPE SAMPLING and CLEARANCE CERTIFICATION to determine whether this paragraph should be included in the project.
****

Submit the name, address and telephone number of the third party consultant selected to perform the wipe sampling for determining concentrations of lead, cadmium and chromium in dust. Submit proper documentation that the consultant is trained and certified as an inspector technician or inspector/risk assessor by the USEPA authorized State (or local) certification and accreditation program.

]1.5.1.5 Certified Risk Assessor

The Certified Risk Assessor must be certified pursuant to 40 CFR 745, Section 226 and be responsible to perform the clearance sampling,

clearance sample data evaluation and summarize clearance sampling results in a section of the abatement report. The risk assessor must sign the abatement report to indicate clearance requirements for the contract have been met.

1.5.2 Requirements

1.5.2.1 Competent Person (CP) Responsibilities

a. Verify training meets all federal, State, and local requirements.

b. Review and approve Lead, Cadmium, Chromium Compliance Plan for conformance to the applicable referenced standards.

c. Continuously inspect LBP/PWL or MCL work for conformance with the approved plan.

d. Perform (or oversee performance of) air sampling. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.

e. Ensure work is performed in strict accordance with specifications at all times.

f. Control work to prevent hazardous exposure to human beings and to the environment at all times.

g. Supervise final cleaning of the lead, cadmium, chromium control area, take clearance wipe samples if necessary; review clearance sample results and make recommendations for further cleaning.

h. Certify the conditions of the work as called for elsewhere in this specification.

i. The CP must be certified pursuant to 40 CFR 745, Section 226 and is responsible for development and implementation of the occupant protection plan, the abatement report and supervise lead, cadmium and chromium hazard abatement work activities.

1.5.2.2 Lead, Cadmium, Chromium Compliance Plan

****

NOTE: State or local regulations may have specific requirements for written project designs. Research specific State or local requirements for public, commercial buildings or structures. Consider the bracketed occupant protection plan for high profile sensitive work such as present in family housing, childcare facilities, administrative buildings, kitchens.

****

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of lead, cadmium and chromium, LBP/PWL or MCL. Include in the plan a sketch showing the location, size, and details of lead, cadmium, chromium control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each

activity from which lead, cadmium, chromium is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead, cadmium, chromium related work, collected waste water and dust containing lead, cadmium, chromium and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead, cadmium, chromium is not released outside of the lead, cadmium, chromium control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multicontractor worksites to inform affected employees and to clarify responsibilities to control exposures.

[The plan must be developed and signed by a certified Lead Project Designer in the State of [_____]. The plan must include the name and certification number of the person signing the plan.

][In occupied buildings, the plan must also include an occupant protection program that describes the measures that will be taken during the work to[notify and] protect the building occupants.

]1.5.2.3 Occupational and Environmental Assessment Data Report

****

NOTE: Sampling results of previous jobs or initial monitoring during the job determine the requirements for further monitoring and the need to fully implement the control and protective requirements. Some LBP/PWL or MCL work may not require full implementation of the requirements of 29 CFR 1926.62. Based on the experience of the Contractor or the use of a specific process or method for performing the work, the Contractor may be able to provide historic data (previous 12 months) to demonstrate that airborne exposures are controlled below the action level. Such methods or controls must be fully presented in the Lead, Cadmium, Chromium Compliance Plan.

****

If initial monitoring is necessary, submit occupational and environmental sampling results to the Contracting Officer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

[In order to reduce the full implementation of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 the Contractor must provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62,29 CFR 1926.1126, 29 CFR 1926.1127 and supporting the Lead, Cadmium, Chromium Compliance Plan.

] a. The initial monitoring must represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62,29 CFR 1926.1126,

29 CFR 1926.1127. The data must represent the worker's regular daily exposure to lead, cadmium, chromium for stated work.

b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 with a complete process description. This includes manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead, cadmium and chromium containing coatings are present.

c. The initial assessment must determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead, cadmium, chromium compliance plan per 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

1.5.2.4 Medical Examinations

Submit pre-work blood lead levels and post-work blood lead levels for all workers performing lead, cadmium, chromium activities during the execution of the work. Initial medical surveillance as required by 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 must be made available to all employees exposed to lead, cadmium, chromium at any time (one day) above the action level. Full medical surveillance must be made available to all employees on an annual basis who are or may be exposed to lead, cadmium and chromium in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127. Adequate records must show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead, cadmium, chromium as indicated in 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

1.5.2.5 Training

Train each employee performing work that disturbs lead, cadmium, chromium, who performs LBP/MCL/PWL disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127, 40 CFR 745 and State [_____] and local regulations where appropriate.

1.5.2.6 Respiratory Protection Program

a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

b. Establish and implement a respiratory protection program as required by 29 CFR 1926.103, 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and 29 CFR 1926.55.

1.5.2.7 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

1.5.2.8 Lead, Cadmium, Chromium Waste Management

****

NOTE: Research local requirements. The EPA has clarified waste requirements where lead-based paint debris generated by contractors in households is excluded from RCRA Subtitle C hazardous waste regulations. Contractors may dispose of LBP-wastes as household wastes subject to applicable State regulations. Determination of the expected waste materials as hazardous or solid waste for disposal should be performed in conjunction with site work. Some construction waste contains lead at lower concentrations, which may be disposed of at local sanitary landfills or Construction and Demolition (C&D) landfills, which are not approved by EPA.

****

The Lead, Cadmium, Chromium Waste Management Plan must comply with applicable requirements of federal, State, and local hazardous waste regulations and address:

a. Identification and classification of wastes associated with the work.

b. Estimated quantities of wastes to be generated and disposed of.

c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location[and operator] and a 24-hour point of contact. Furnish two copies of [USEPA] [State (in accordance with [_____])][and][local] hazardous waste [permit applications][permits][manifests][and][USEPA Identification numbers].

d. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.

e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.

f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.

g. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Clean up and containerize wastes daily.

h. Include any process that may alter or treat waste rendering a hazardous waste non hazardous.

i. Unit cost for hazardous waste disposal according to this plan.

1.5.2.9 Environmental, Safety and Health Compliance

****

NOTE: Include applicable State, regional, and local laws, regulations, and statutes. Do careful research since not all State and local laws are

similar. Verify with the State or local authorities whether the city, county, State or the USEPA has jurisdiction and whether licensing or certification is required. Also identify the authority or code sponsor and the laws, regulations and statutes cited under paragraph REFERENCES using complete title and number.
****

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead, cadmium and chromium. Comply with the applicable requirements of the current issue of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127, EM 385-1-1, ND OPNAVINST 5100.23. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirements apply. The following [local][and][State] laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead, cadmium and chromium-contaminated materials apply:

a. [_____]

b. [_____]

c. [_____]

[[Licensing][and certification] in the state of [_____] is required.

]1.5.3 Pressure Differential Recordings for Local Exhaust System

****
NOTE: When an negative pressure enclosure is not required, delete the requirements for the local exhaust system and pressure differential recording.
****

****
NOTE: Normal practice is to have the Contractor hire one independent Private Qualified Person (the PQP) to perform all required functions. However, some applicable laws forbid this approach and will dictate when the PQP, the GC or both will be required to perform the function involved. However, the Contractor must always hire a PQP.
****

Provide a local exhaust system that creates a negative pressure of at least 0.51 mm 0.02 inches of water relative to the pressure external to the enclosure and operate it continuously, 24-hours a day, until the temporary enclosure of the lead, cadmium, chromium control area is removed. Submit pressure differential recordings for each work day to the [PQP][and][GC] for review and to the Contracting Officer within 24-hours from the end of each work day.

1.5.4 Licenses, Permits and Notifications

****

NOTE: Consult with the customer, district engineering, construction and safety offices and all outside regulatory authorities (EPA, state, county, city) having jurisdiction over any part of the project to determine whether a license or permit is required and who is responsible for submitting required notifications to various agencies. The designer then must make the decision if the required permits are to be obtained by the Contractor or the Government. If the Contractor is to provide the permits, include this paragraph and choose the appropriate bracketed items. If the Government is to obtain the permits/licenses, delete this entire paragraph.

****

Certify and submit in writing to the [Regional Office of the EPA] [state's environmental protection agency responsible for lead hazard abatement activities] [_____] [and the Contracting Officer] at least [10] [_____] days prior to the commencement of work that [_____] licenses, permits and notifications have been obtained. All associated fees or costs incurred in obtaining the licenses, permits and notifications are included in the contract price.

1.5.5 Occupant Protection Plan

The certified project designer must develop and implement an Occupant Protection Plan describing the measures and management procedures to be taken during lead, cadmium and chromium hazard abatement activities to protect the building occupants/building facilities and the outside environment from exposure to any lead, cadmium and chromium contamination while lead, cadmium and chromium hazard abatement activities are performed.

1.5.6 Pre-Construction Conference

Along with the CP, meet with the Contracting Officer to discuss in detail the Lead, Cadmium, Chromium Waste Management Plan and the Lead, Cadmium, Chromium Compliance Plan, including procedures and precautions for the work.

1.6 EQUIPMENT

1.6.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead, cadmium and chromium dust, fume and mist. Respirators must comply with the requirements of 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

1.6.2 Special Protective Clothing

Personnel exposed to lead, cadmium, chromiumcontaminated dust must wear proper [disposable] [uncontaminated, reusable] protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the CP.

1.6.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

1.6.4 Vacuum Filters

UL 586 labeled HEPA filters.

1.6.5 Equipment for Government Personnel

****
NOTE: Verify the number of sets required with the Contracting Officer.
****

Furnish the Contracting Officer with [two] [_____] complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the lead, cadmium and chromium removal work within the lead, cadmium and chromium controlled area. Personal protective equipment must include disposable whole body covering, including appropriate foot, head, eye, and hand protection. PPE remains the property of the Contractor. The Government will provide respiratory protection for the Contracting Officer.

1.6.6 Abrasive Removal Equipment

The use of powered machine for vibrating, sanding, grinding, or abrasive blasting is prohibited unless equipped with local exhaust ventilation systems equipped with high efficiency particulate air (HEPA) filters.

1.6.7 Negative Air Pressure System

****
NOTE: Negative Air Pressure Systems are typically required only for projects using powered floor sanding or abrasive blasting techniques. Both techniques may have application for historical restoration, but are not typically used as lead, cadmium and chromium hazard abatement techniques. Remove the following two paragraphs if negative air pressure systems are not necessary for the project.
****

1.6.7.1 Minimum Requirements

Do not proceed with work in the area until containment is set up and HEPA filtration systems are in place. The negative air pressure system must meet the requirements of ASSP Z9.2 including approved HEPA filters in accordance with UL 586. Negative air pressure equipment must be equipped with new HEPA filters, and be sufficient to maintain a minimum pressure differential of minus 0.005 kPa 0.02 inch of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed as follows:

a. The unit must be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place.

b. The HEPA filter must be certified as being capable of trapping and retaining mono-disperse particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.

c. The unit must be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 0.625 kPa 2.5 inches of water static pressure differential on a magnehelic gauge.

d. Equip the unit with a manometer-type negative pressure differential monitor with minor scale division of 0.005 kPa 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer must be calibrated daily as recommended by the manufacturer.

e. Equip the unit with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.

f. Equip the unit with an electronic mechanism that automatically shuts the machine off in the event of a filter breach or absence of a filter.

g. Equip the unit with an audible horn that sounds an alarm when the machine has shut itself off.

h. Equip the unit with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.

1.6.7.2 Auxiliary Generator

Provide an auxiliary generator with capacity to power a minimum of 50 percent of the negative air machines at any time during the work. When power fails, the generator controls must automatically start the generator and switch the negative air pressure system machines to generator power. The generator must not present a carbon monoxide hazard to workers.

1.6.8 Vacuum Systems

Vacuum systems must be suitably sized for the project, and filters must be capable of trapping and retaining all mono-disperse particles as small as 0.3 micrometers (mean aerodynamic diameter) at a minimum efficiency of 99.97 percent. Properly dispose of used filters that are being replaced.

1.6.9 Heat Blower Guns

Heat blower guns must be flameless, electrical, paint-softener type with controls to limit temperature to 590 degrees C 1,100 degrees F. Heat blower must be (grounded) 120 volts ac, and must be equipped with cone, fan, glass protector and spoon reflector nozzles.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Keep materials and equipment needed to complete the project available and on the site. Submit a description of the materials and equipment required; including Safety Data Sheets (SDSs) for material brought onsite to perform the work.

2.1.1 Expendable Supplies

Submit a description of the expendable supplies required.

2.1.1.1 Polyethylene Bags

Disposable bags must be polyethylene plastic and be a minimum of 0.15 mm 6 mils thick (0.1 mm4 mils thick if double bags are used) or any other thick plastic material shown to demonstrate at least equivalent performance; and capable of being made leak-tight. Leak-tight means that solids, liquids or dust cannot escape or spill out.

2.1.1.2 Polyethylene Leak-tight Wrapping

Wrapping used to wrap lead, cadmium, chromium contaminated debris must be polyethylene plastic that is a minimum of 0.15 mm 6 mils thick or any other thick plastic material shown to demonstrate at least equivalent performance.

2.1.1.3 Polyethylene Sheeting

Sheeting must be polyethylene plastic with a minimum thickness of 0.15 mm 6 mil, or any other thick plastic material shown to demonstrate at least equivalent performance; and be provided in the largest sheet size reasonably accommodated by the project to minimize the number of seams. Where the project location constitutes an out of the ordinary potential for fire, or where unusual fire hazards cannot be eliminated, provide flame-resistant polyethylene sheets which conform to the requirements of NFPA 701.

2.1.1.4 Tape and Adhesive Spray

Tape and adhesive must be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive must retain adhesion when exposed to wet conditions, including amended water. Tape must be minimum 50 mm 2 inches wide, industrial strength.

2.1.1.5 Containers

When used, containers must be leak-tight and be labeled in accordance with EPA, DOT and OSHA standards.

2.1.1.6 Chemical Paint Strippers

Chemical paint strippers must not contain methylene chloride and be formulated to prevent stain, discoloration, or raising of the substrate materials.

2.1.1.7 Chemical Paint Stripper Neutralizer

Neutralizers for paint strippers must be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

2.1.1.8 Detergents and Cleaners

Detergents or cleaning agents must not contain trisodium phosphate and have demonstrated effectiveness in lead, cadmium and chromium control work using cleaning techniques specified by HUD 6780 guidelines.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Protection

3.1.1.1 Notification

a. Notify the Contracting Officer [20] [_____] days prior to the start of any lead, cadmium and chromium work.

[b. Occupant Notification

****
NOTE: Projects in target housing involving improvement, or maintenance (renovation or repair), that disrupt more than 2 square feet of painted surface while being occupied requires occupant notification prior to work.
****

Submit occupant written acknowledgment of the delivery of lead hazard information pamphlet (EPA 747-K-99-001 "Protect Your Family From Lead in Your Home") prior to commencing the renovation work for each affected unit using language provided in 40 CFR 745 Subpart E.

][c. Notification of the Commencement of [LBP] Hazard Abatement

****
NOTE: In some states, notification of lead-based paint hazard abatement work by the contractor must be made prior to work. Research if prior notification is required for the locality where work is conducted.
****

[Submit a copy of the notification of the commencement of[LBP] hazard abatement to [_____] according to the procedures established by [_____].

]]3.1.1.2 Lead, Cadmium, Chromium Control Area

a. Physical Boundary - Provide physical boundaries around the lead, cadmium, chromium control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead, cadmium and chromium will not escape outside of the lead, cadmium and chromium control area. Prohibit the

general public from accessing the lead, cadmium, chromium control areas.

b. Warning Signs - Provide warning signs at approaches to lead, cadmium, chromium control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs must comply with the requirements of 29 CFR 1926.62.

3.1.1.3 Furnishings

****
NOTE: Verify with the activity furniture or equipment requirements.
****

[The Government will remove furniture and equipment from the building before lead, cadmium and chromium work begins.

][Furniture [_____] and equipment will remain in the [building][lead, cadmium, chromium control area]. Protect and cover furnishings or remove furnishings from the work area and store in a location approved by the Contracting Officer.

][Existing [furniture][and][equipment] is lead, cadmium and chromium contaminated, [decontaminate][dispose of as lead, cadmium, chromium contaminated waste].

]3.1.1.4 Heating, Ventilating and Air Conditioning (HVAC) Systems

Shut down, lock out, and isolate HVAC systems that supply, exhaust, or pass through the lead, cadmium, chromium control areas. Seal intake and exhaust vents in the lead, cadmium, chromium control area with 0.15 mm 6 mil plastic sheet and tape. Seal seams in HVAC components that pass through the lead, cadmium, chromium control area.[Provide temporary HVAC system for areas in which HVAC has been shut down outside the lead, cadmium, chromium control area.]

3.1.1.5 Local Exhaust System

****
NOTE: When a negative pressure enclosure is not required, delete the requirements for the local exhaust system and pressure differential recording.
****

Provide a local exhaust system in the lead, cadmium, chromium control area in accordance with ASSP Z9.2, 29 CFR 1926.62, 29 CFR 1926.1126 and 29 CFR 1926.1127 that will provide at least [4][_____] air changes per hour inside of the negative pressure enclosure. Local exhaust equipment must be operated 24-hours per day, until the lead, cadmium, chromium control area is removed and must be leak proof to the filter and equipped with HEPA filters. Maintain a minimum pressure differential in the lead, cadmium, chromium control area of minus 0.51 mm 0.02 inch of water column relative to adjacent, unsealed areas. Provide continuous 24-hour per day monitoring of the pressure differential with a pressure differential automatic recording instrument. The building ventilation system must not be used as the local exhaust system for the lead, cadmium, chromium control area. Filters on exhaust equipment must conform to ASSP Z9.2 and

UL 586. Terminate the local exhaust system out of doors and remote from any public access or ventilation system intakes.

3.1.1.6 Negative Air Pressure System Containment

****

NOTE: Require containment to be equipped with negative air pressure control equipment specified in paragraph NEGATIVE AIR PRESSURE SYSTEM in PART 2 and operated as specified below if lead, cadmium, chromium hazard control activities require blasting or power sanding techniques to remove lead, cadmium, chromium. Remove this paragraph if not required in the project.

****

a. Operate the negative air pressure systems to provide at least [4][10][_____] air changes per hour inside the containment. Operate the local exhaust unit equipment continuously until the containment is removed. Smoke test the negative air pressure system for leaks at the beginning of each shift. The certified supervisor is responsible to continuously monitor and keep a pressure differential log with an automatic manometric recording instrument. Notify the Contracting Officer immediately if the pressure differential falls below the prescribed minimum. Submit the continuously monitored pressure differential log, as specified. Do not use the building ventilation system as the local exhaust system. Terminate the local exhaust system out of doors unless the Contracting Officer allows an alternate arrangement. All filters must be new at the beginning of the project and be periodically changed as necessary to maintain specified pressure differential and disposed of as lead, cadmium and chromium contaminated waste.

b. Discontinuing Negative Air Pressure System. Operate the negative air pressure system continuously during abatement activities unless otherwise authorized by the Contracting Officer. At the completion of the project, units must be run until full cleanup has been completed and final clearance testing requirements have been met. Dismantling of the negative air pressure systems must [conform to written decontamination procedures] [be approved by the Contracting Officer] be as presented in the Lead, Cadmium, Chromium Compliance Plan. Seal the HEPA filter machine intakes with polyethylene to prevent environmental contamination.

3.1.1.7 Decontamination Shower Facility

Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

3.1.1.8 Eye Wash Station

Provide suitable facilities within the work area for quick drenching or flushing of the eyes where eyes may be exposed to injurious corrosive materials.

3.1.1.9 Mechanical Ventilation System

a. Use adequate ventilation to control personnel exposure to lead,

cadmium and chromium in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127. To the extent feasible, use local exhaust ventilation or other collection systems, approved by the CP. Evaluate and maintain local exhaust ventilation systems in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127.

b. Vent local exhaust outside the building and away from building ventilation intakes or ensure system is connected to HEPA filters.

c. Use locally exhausted, power actuated tools or manual hand tools.

3.1.1.10 Personnel Protection

Personnel must wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead, cadmium, chromium control area. No one will be permitted in the lead, cadmium, chromium control area unless they have been appropriately trained and provided with protective equipment.

3.2 ERECTION

3.2.1 Lead, Cadmium, Chromium Control Area Requirements

****
NOTE: Choose the first paragraph if PWL or MCL will be removed by means that will not create airborne, dust containing lead, cadmium, chromium (such as carefully unfastening sheets containing lead, cadmium, chromium from walls). Choose the second paragraph if removal practice will create airborne, dust containing lead, cadmium, chromium (such as sanding, sawing, grinding, thermal cutting or digging or demolition activities). Select the control method that will ensure efficiency and prevents lead, cadmium, chromium from escaping outside of the lead, cadmium, chromium control area.
****

[Establish a lead, cadmium, chromium control area by completely establishing barriers and physical boundaries around the area or structure where PWL or MCL removal operations will be performed.
]

****
NOTE: The Designer should consider the use of viewing ports for lead, cadmium and chromium control areas under 100 square meters 1,000 square feet to save inspection time.
****

[Full containment - Contain removal operations by the use of[critical barriers][and HEPA filtered exhaust][a negative pressure enclosure system with decontamination facilities and with HEPA filtered exhaust if required by the CP]. For containment areas larger than 100 square meters 1,000 square feet install a minimum of two 450 mm 18 inch square viewing ports. Locate ports to provide a view of the required work from the exterior of the enclosed contaminated area. Glaze ports with laminated safety glass.

]3.3 APPLICATION

3.3.1 Lead, Cadmium, Chromium Work

Perform lead, cadmium, chromium work in accordance with approved Lead, Cadmium, Chromium Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead, cadmium, chromium when the work is performed in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127[or 40 CFR 745], and as specified herein. Dispose of all PWL or MCL and associated waste in compliance with federal, State, and local requirements.

3.3.2 Paint with Lead, Cadmium, Chromium or Material Containing Lead, Cadmium, Chromium Removal

****
NOTE: Use bracketed prohibition on manual and power sanding/grinding of lead, cadmium, chromium surfaces/materials when appropriate. Large scale manual or power sanding/grinding of lead, cadmium, chromium containing surfaces should never be allowed in family housing, child care facilities, administrative buildings, galleys, barracks, due to problems associated with the resulting dust fallout/contamination of crevices and cracks which may retain unseen quantities of lead, cadmium, chromiumcontaminated dust. Use of these techniques for exteriors should be limited because the resulting airborne dust could result in significant contamination of the ground in the immediate vicinity of the facility. Manual or power sanding/grinding of lead, cadmium, chromium containing surfaces may be an acceptable work method only if appropriate engineering controls for personnel/environmental protection are in place.
****

****
NOTE: For commercial/public buildings and industrial buildings, the designer will have to ascertain appropriate procedures, methods and techniques to control lead, cadmium, chromium hazards. The use of enclosure or soil barriers as a control system requires the input of engineering/ architectural experts familiar with these controls. Add additional paragraphs to address unique local or state requirements.
****

[Manual or power sanding or grinding of lead, cadmium, chromium surfaces or materials is not permitted unless tools are equipped with HEPA attachments or wet methods. The dry sanding or grinding of surfaces that contain lead, cadmium, chromium is prohibited.]Provide methodology for removing lead, cadmium, chromium in the Lead, Cadmium, Chromium Compliance Plan. Select lead, cadmium, chromium removal processes to minimize contamination of work areas outside the control area with lead, cadmium, chromium contaminated dust or other lead, cadmium, chromium contaminated debris or waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead, cadmium, chromium. Describe this

removal process in the Lead, Cadmium, Chromium Compliance Plan. [_____]

[Avoid [flash rusting][deterioration] of the substrate. Provide surface preparations for painting in accordance with Section 09 90 00 PAINTS AND COATINGS.

]

****

NOTE: Listed below are various types of paint removal techniques. Designer may be required to specify a particular technique in order to limit potential conflicts or problems.

1. Wood, Drywall, Interior Partitions

a. Scraping

b. Heat Stripping

c. Chemical Stripping

d. Power Tool Cleaning (least acceptable)

e. Wet Abrasive Blasting

Chemical stripping should be carefully researched as a removal method for soft wood (e.g., pine or redwood) substrates. The wrong chemical strippers can increase the risk of residual lead, cadmium, chromium contamination in the substrate.

2. Steel and Metal Surfaces (Industrial)

a. Power/Hand Tool Cleaning (least acceptable)

b. Dry Abrasive Blast with Water Ring (Wet "Halo")

c. Wet Abrasive Blast

d. Low Volume High Pressure Water Blast

e. Chemical Stripping

f. Vacuum Blast

The following practices are restricted during lead, cadmium and chromium hazard abatement work on housing per 40 CFR 745: Open flame burning or torching is prohibited; machine sanding or grinding or abrasive blasting on LBP is prohibited unless used with High Efficiency Particulate Air (HEPA) exhaust control; dry scraping in conjunction with heat guns, or around electrical outlets, is permitted if limited to no more than 2 square feet in any one room (20 square feet on exterior surfaces); heat guns must operate at a temperature below 1100 degrees Fahrenheit.

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NOTE: For lead, cadmium and chromium hazard abatement work in housing or child occupied facilities, consult the risk assessment report to select abatement or interim control techniques to be used in target housing. For commercial/public buildings and industrial buildings, the designer will have to ascertain appropriate procedures, methods and techniques to control lead, cadmium and chromium hazards. The use of encapsulation, enclosure, or soil barriers as an abatement/control system requires the input of engineering/ architectural experts familiar with these controls. Encapsulation should not be specified for areas

where water damage exists or could easily occur. The designer may need to test the existing substrates to ascertain that encapsulation is feasible at all. Methods listed or taken from the current HUD Guidelines may be considered. Add additional paragraphs to address unique local or state requirements.

****

Provide methodology for lead, cadmium and chromium, LBP/PWL [removal][abatement/control] and processes to minimize contamination of work areas outside the control area with lead, cadmium, chromium contaminated dust or other lead, cadmium, chromium contaminated debris/waste and to ensure that unprotected personnel are not exposed to hazardous concentrations of lead, cadmium, chromium. Describe this lead,, cadmium and chromium, LBP/PWL removal/control process in the Lead, Cadmium, Chromium Compliance Plan. [_____]

3.3.2.1 Paint with Lead, Cadmium, Chromium or Material Containing Lead, Cadmium, Chromium - Indoor Removal

Perform [manual][mechanical] removal[and thermal cutting] in the lead, cadmium, chromium control areas using enclosures, barriers or containments[and powered locally exhausted tools equipped with HEPA filters]. Collect residue and debris for disposal in accordance with federal, State, and local requirements.

3.3.2.2 Paint with Lead, Cadmium, Chromium or Material Containing Lead, Cadmium, Chromium - Outdoor Removal

Perform outdoor removal as indicated in federal, State, and local regulations and in the Lead, Cadmium, Chromium Compliance Plan. The worksite preparation (barriers or containments) must be job dependent and presented in the Lead, Cadmium, Chromium Compliance Plan.

3.3.3 Personnel Exiting Procedures

Whenever personnel exit the lead, cadmium, chromium controlled area, they must perform the following procedures and must not leave the work place wearing any clothing or equipment worn in the control area:

a. Vacuum all clothing before entering the contaminated change room.

b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.

****

NOTE: Showering is the preferred method of personal decontamination. However, extenuating circumstances may prevent the use of a shower at the work site. In that event, choose the alternate selection. Note that the alternate is generally a very expensive method and should be used only when showering at the site is unfeasible.

****

[c. Shower.

][c. Wash hands and face at the site, don appropriate disposable or

uncontaminated reusable clothing, move to an appropriate shower facility, shower.

] d. Change to clean clothes prior to leaving the clean clothes storage area.

3.4 FIELD QUALITY CONTROL

3.4.1 Tests

3.4.1.1 Air and Wipe Sampling

Conduct sampling for lead, cadmium, chromium in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and as specified herein. Air and wipe sampling must be directed or performed by the CP.

a. The CP must be on the job site directing the air and wipe sampling and inspecting the PWL or MCL removal work to ensure that the requirements of the contract have been satisfied during the entire PWL or MCL operation.

b. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the CP. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.

c. Submit results of air samples, signed by the CP, within 72-hours after the air samples are taken.

d. Conduct area air sampling daily, on each shift in which lead, cadmium and chromium and lead-based paint removal operations are performed, in areas immediately adjacent to the lead, cadmium and chromium control area. Conduct sufficient area monitoring to ensure unprotected personnel are not exposed at or above 30 micrograms of lead per cubic meter of air or 2.5 micrograms of cadmium/chromium per cubic meter of air. If 30 micrograms of lead per cubic meter of air or 2.5 micrograms of cadmium/chromium per cubic meter of air is reached or exceeded, stop work, correct the conditions(s) causing the increased levels. Notify the Contracting Officer immediately. Determine if condition(s) require any further change in work methods. Resume removal work only after the CP and the Contracting Officer give approval.

****

NOTE: Include the following paragraph for high profile, sensitive work such as present in family housing, child care facilities, administrative buildings, kitchens, barracks. Use the following paragraph along with clearance certification by a third party consultant specified in paragraph CLEARANCE CERTIFICATION to determine if significant contamination was due to the contract work. Surface dust sampling to determine clearance (i.e., that the work has not contaminated surfaces within and adjacent to the control area) should be performed by a third party to reduce a conflict of interest. Samples must be conducted by an individual not paid or employed or otherwise compensated by the lead Contractor. State or local regulations may require

third party.
****

[e. Before any work begins,[a third party consultant must] collect and analyze baseline wipe[and soil] samples in accordance with methods defined by federal, State, and local standards inside and outside of the physical boundary to assess the degree of dust contamination in the facility prior to lead, cadmium and chromium disturbance or removal. Provide Initial Sample Results to the Contracting Officer before work begins.
]

****
NOTE: Lead, cadmium, chromium hazard control area containment adequacy should be checked by surface wipe sampling of floors in all buildings that are or will be occupied. The exceptions being buildings to be demolished or industrial buildings.
****

[f. Surface Wipe Samples - Collect surface wipe samples on floors at a location no greater than 3 m 10 feet outside the lead, cadmium, chromium control area at a frequency of once per day while lead, cadmium, chromium removal work is conducted in occupied buildings. Surface wipe samples or Micro Vacuum surface sample results must meet criteria in paragraph CLEARANCE CERTIFICATION.

]3.4.1.2 Sampling After Removal

After the visual inspection,[conduct soil sampling if bare soil is present during external removal operations and] collect wipe[and soil] samples according to the HUD protocol contained in HUD 6780 to determine the lead, cadmium and chromium content of settled dust in micrograms per square meter foot of surface area[and micrograms per gram (ug/g) parts per million (ppm) for soil].

[3.4.1.3 Testing of Material Containing Lead, Cadmium, Chromium Residue

****
NOTE: Include this paragraph when the residue is questionable with respect to its lead, cadmium, chromium content, otherwise delete.
****

Test residue in accordance with 40 CFR 261 for hazardous waste.

]3.5 CLEANING AND DISPOSAL

3.5.1 Cleanup

Maintain surfaces of the lead, cadmium, chromium control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area. At the end of each shift and when the lead, cadmium, chromium operation has been completed, clean the controlled area of all visible contamination by vacuuming with a HEPA filtered vacuum cleaner, wet mopping the area and wet wiping the area as indicated by the Lead, Cadmium, Chromium Compliance Plan. Reclean areas showing dust or debris. After visible dust and debris is removed, wet wipe and HEPA vacuum all surfaces in the controlled area. If adjacent areas

become contaminated at any time during the work, clean, visually inspect, and then wipe sample all contaminated areas. The CP must then certify in writing that the area has been cleaned of lead, cadmium and chromium contamination before clearance testing.

3.5.1.1 Clearance Certification

****

NOTE: The second paragraph must be used for high profile, sensitive work such as present in family housing, child care facilities, kitchens. For work in administrative buildings or the conversion of industrial lead, cadmium and chromium work areas (e.g., firing ranges) into non-industrial work areas open for public access, use the third paragraph otherwise delete. For industrial buildings, use visual clearance only. Surface dust sampling to determine clearance (i.e., that the work has not contaminated surfaces within and adjacent to the control area) should be performed by a third party to reduce a conflict of interest.

****

The CP must certify in writing that air samples collected outside the lead, cadmium, chromium control area during paint removal operations are less than 30 micrograms of lead per cubic meter of airand less than 2.5 micrograms of cadmium/chromium per cubic meter of air; the respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127; and that there were no visible accumulations of material and dust containing lead, cadmium, chromium left in the work site. Do not remove the lead, cadmium, chromium control area or roped off boundary and warning signs prior to the Contracting Officer's acknowledgement of receipt of the CP certification.

[The third party consultant must certify surface wipe sample results collected inside and outside the work area are[less than 40 micrograms of lead per 0.1 square meter square foot on floors, less than 250 micrograms of lead per 0.1 square meter square foot on interior window sills and less than 400 micrograms of lead per 0.1 square meter square foot on window troughs][not significantly greater than the initial surface loading determined prior to work].

][The third party consultant must certify surface wipe sample or Micro Vacuum surface sample results collected inside and outside the work area are less than 200 micrograms of lead per 0.1 square meter square foot on floors or horizontal surfaces. Micro Vacuum technique should be used on rough or porous surfaces which are difficult to achieve clearance by the wipe sampling methodology.

][Certify surface wipe samples are not significantly greater than the initial surface loading determined prior to work.

][Clear the lead, cadmium, chromium control area in industrial facilities of all visible dust and debris.

][For exterior work, soil samples taken at the exterior of the work site must be used to determine if soil lead, cadmium, chromium levels have increased at a statistically significant level (significant at the 95

percent confidence limit) from the soil lead, cadmium, chromium levels prior to the operation. If soil lead, cadmium, chromium levels either show a statistically significant increase above soil lead, cadmium, chromium levels prior to work or soil lead, cadmium, chromium levels above any applicable federal or state standard for lead, cadmium, chromium in soil, the soil must be remediated.

][For lead, cadmium and chromium-based paint hazard abatement work, surface wipe and soil sampling must be conducted and clearance determinations made according to the work practice standards presented in 40 CFR 745.227.

]3.5.2 Disposal

****
NOTE: Notify the activity that Federal regulations (40 CFR 260-265) require a USEPA generator identification number for use on the Uniform Hazardous Waste Manifest prior to commencement of removal work. A USEPA generator identification number will not be required if it is certain that the work will not generate HW.
****

****
NOTE: Research State, regional, and local laws, regulations, and statutes and revise the specifications accordingly. Proper segregation and handling of waste can significantly reduce the generated volume (and cost) of disposing hazardous wastes.
****

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NOTE: Research State, regional, and local requirements regarding the recycling of lead, cadmium and chromium wastes. Ensure that other hazardous components are not present. The entire waste stream or discreet portions of the waste may be appropriately packaged and transported for recycling (Consider Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL). If waste is eligible for sanitary landfill or C&D landfill disposal, some of these requirements are not applicable.
****

a. Dispose of material, whether hazardous or non-hazardous in accordance with all laws and provisions and all federal, State or local regulations. Ensure all waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.

b. Contractor is responsible for segregation of waste. Collect lead, cadmium, chromium contaminated waste, scrap, debris, bags, containers, equipment, and lead, cadmium, chromiumcontaminated clothing that may produce airborne concentrations of lead, cadmium, chromium particles. Label the containers in accordance with 29 CFR 1926.62, 29 CFR 1926.1126, 29 CFR 1926.1127 and 40 CFR 261, 40 CFR 262 and corresponding state regulations.

c. Dispose of lead, cadmium, chromiumcontaminated material classified as hazardous waste at an [EPA][or][State] approved hazardous waste treatment, storage, or disposal facility off Government property.

d. Accumulate waste materials in U.S. Department of Transportation (49 CFR 178) approved 55 gallon drums or appropriately sized container for smaller volumes. Properly label each drum to identify the type of hazardous material (49 CFR 172). For hazardous waste, the collection container requires marking/labeling in accordance with 40 CFR 262 and corresponding state regulations during the accumulation/collection timeframe. The Contracting Officer or an authorized representative will assign an area for accumulation of waste containers. Coordinate authorized accumulation volumes and time limits with the host installation environmental function.

e. Handle, store, transport, and dispose lead, cadmium, chromium or lead, cadmium, chromium contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268.

f. All lead, cadmium, and chromium waste generation, management,and disposal will be coordinated with the host installation environmental function.

3.5.2.1 Disposal Documentation

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NOTE: Include the following paragraph if the Contractor is to dispose of waste.
****

Coordinate all disposal or off-site shipments of lead, cadmium, and chromium waste with the host installation environmental function. Submit written evidence of TSD approval to demonstrate the hazardous waste treatment, storage, or disposal facility (TSD) is approved for lead, cadmium, chromium disposal by the EPA, State or local regulatory agencies. Submit one copy of the completed hazardous waste manifest, signed and dated by the initial transporter in accordance with 40 CFR 262. Provide a certificate that the waste was accepted by the disposal facility.[Provide turn-in documents or weight tickets for non-hazardous waste disposal.]

3.5.2.2 Payment for Hazardous Waste

Payment for disposal of hazardous and non-hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility is received and approved by the Contracting Officer. The manifest must detail and certify the amount of lead, cadmium, chromium containing materials or non-hazardous waste delivered to the treatment or disposal facility.

-- End of Section --