

**1. General**

**1.1 SCOPE OF WORK**

- .1 The scope of work for this lead abatement project involves the abatement of lead dust from all horizontal and vertical surfaces in Rooms 101 and 103 of the former firing range areas of the RCMP Calgary Post Garage building.

The building consists of both office and shop space. The lead abatement in the building will involve the surface cleaning of all walls, floors, HVAC equipment and structural components including, but not limited to, roof deck assemblies, columns, beams, girts, purlins and open web steel joists. The scope of work also includes the removal of ductwork from Rooms 101 and 103 of the building.

The rooms to be included in the lead abatement scope of work are 101 and 103, as identified in the floorplan prepared by Jacques Whitford in their report titled *Lead Assessment of Old Indoor Firing Range, RCMP South Alberta District Building, 920 – 16 Avenue NE, Calgary, Alberta* dated March 31, 2006. A copy of the floorplan is available.

- .2 This work is to be completed by an experienced Lead Remediation Contractor.
- .3 Provide worker protection and decontamination area.
- .4 The Contractor will provide all labour, materials, supplies and equipment to isolate all areas and rooms, as necessary.
- .5 At the completion of final cleaning activities, post-remediation confirmatory surface sampling will be conducted by the Departmental Representative.

**1.2 DEFINITIONS**

- .1 Lead Control Work: means lead particulate removal procedures, and disposal of lead or materials containing lead, as specified.
- .2 Lead Control Area: means space in which lead particulate control work is being performed and to which general access is prohibited.
- .3 Lead Waste: means removed contaminant and contaminated materials or products.
- .4 Contaminant: means lead particulate material.
- .5 Contaminated: describes products, by-products or materials containing or affected by lead particulate removal thereof.
- .6 Action Level: a health criterion for a substance in air set at 50% of the Occupational Exposure Limit (OEL) for that substance.
- .7 HEPA Filter: high efficiency particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns or larger, for powered air purifying respirators, vacuums, vacuum trucks and negative air units.
- .8 P100 Filter: high efficiency, oil-proof, particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns or larger, for powered air purifying respirators.

- .9 Containment System: A containment system includes the cover panels, screens, tarps, scaffolds, supports, and shrouds used to enclose an entire work area or a paint removal tool. The purpose is to minimize or prevent the debris generated during surface preparation from entering into the environment, and to facilitate the controlled collection of the debris for disposal. Containment systems may also employ the use of ground covers or water booms.
- .10 Emissions: When used in this guide, emissions from the containment that require control include airborne plumes of material, as well as spills or leaks of water, abrasives, paint chips, and debris.
- .11 Impenetrable: Impervious to dust and wind.
- .12 Impermeable: Impervious to water.
- .13 TCLP Testing: Toxicity Characteristic Leaching Procedure (TCLP) described in the Waste Control Regulation and used to classify hazardous waste in accordance with the requirements of the regulation.
- .14 Contractor: firm responsible for completing scope of work and complying with requirements of project.
- .15 Departmental Representative: an organization or individual retained by the Client to aid in project oversight on the Client's behalf, receive and review project submittals and conduct activities as specified below.
- .16 CSA: Canadian Standards Association
- .17 DCU: Decontamination Unit
- .18 MUC: Maximum use concentration
- .19 HVAC: Heating, ventilation and air conditioning.
- .20 VAV: Variable air volume

### **1.3 WORKER QUALIFICATIONS**

- .1 Workers used for handling, removal and packaging for disposal of lead waste, shall have been trained in the hazards associated with lead, acceptable to Alberta Human Services, Occupational Health & Safety.
- .2 At least one employee who will be performing the work shall have completed a first aid course. The Contractor is required to provide proof of worker First Aid training which will be reviewed by the Departmental Representative. Documentation must be received by the Departmental Representative one week prior to requesting authorization to proceed with lead abatement activities. Proof of First Aid training must also be made available on site during lead remediation activities.

### **1.4 HEALTH MONITORING**

- .1 Provide evidence to the Departmental Representative of pre-employment and period health assessments in accordance with Alberta Human Services, Occupational Health & Safety, Chemical Hazards Bulletin CH061, Lead at the Work Site, July 2009. Health assessments to include a health history, physical examination, blood testing and other tests deemed necessary by the medical examiner. It is imperative that personal information or worker-specific test results are not made available, only evidence that the health monitoring has been conducted.
- .2 Comply with and provide evidence to the Departmental Representative of submittal requirements regarding health monitoring regarding medical examinations, blood tests and other test results deemed necessary by the medical examiner. It is imperative that

personal information or worker-specific test results are not made available, only evidence that the health monitoring has been conducted.

## **1.5 SUBMITTALS**

- .1 Comply with requirements of this Section. Provide submittals prior to start of lead control work. A table of required submittals and submission dates is provided below.
- .2 Submit a copy of a Lead Exposure Control Plan to the Department Representative one week prior to the commencement of lead remediation activities as described in Part 4, Section 41 of the Alberta Health and Safety Code 2009. The Department Representative must review the Lead Exposure Control Plan prior to the commencement of lead remediation activities. Include the following information in the plan:
  - .1 Locations of:
    - .1 Lead control areas;
    - .2 Change area;
    - .3 Barrier tape areas; and
    - .4 Decontamination area.
  - .2 Sequencing of lead removal related work.
- .3 Submit an abatement schedule outlining project phasing and the critical path of milestone events including work area preparation, clean up, disposal, final cleaning, testing and air monitoring.
- .4 Submit to the Departmental Representative proof of worker training for all workers assigned to the work of this section, including specified worker training on the hazards associated with lead, Workplace Hazardous Materials Information System (WHMIS), Transportation of Dangerous Goods (TDG), First Aid Certification and other training certification required by the Departmental Representative.
- .5 Submit to the Departmental Representative proof of applicable health monitoring for all workers assigned to the work of this section. Documentation to include evidence of medical examinations, evidence of pre-employment blood testing and evidence of other tests deemed necessary by the medical examiner. It is imperative that personal information or worker-specific test results are not made available, only evidence that the health monitoring has been conducted.
- .6 Submit to the Departmental Representative copies of test results documenting manufactures leak test for HEPA-filtered negative air units and vacuums. Testing to be arranged by the Contractor once equipment is delivered to site and documentation to be made available at the time of the pre-contamination site assessment.
- .7 Submit to the Departmental Representative at least one week prior to anticipated lead remediation start date certification that HEPA-filtered vacuums required for this contract meet specified HEPA filter designation for component filter assemblies.
- .8 Submit to the Departmental Representative disposal procedures for contaminant and contaminated waste to the Departmental Representative at least one week prior to anticipated lead remediation start date.

- .9 Submit to the Departmental Representative worker decontamination procedures and a project-specific health and safety plan at least one week prior to anticipated lead remediation start date. The health and safety plan must include procedures for addressing incidents and injuries on site.

**Table 1: Breakdown of Required Project Submittals and Submission Dates**

<b>Submittal Required</b>	<b>Submission Date</b>
<ul style="list-style-type: none"> <li>Section 1.3.2 - Evidence of Worker First Aid Training</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> <li>Made Available on Site During Lead Remediation Activities</li> </ul>
<ul style="list-style-type: none"> <li>Sections 1.4.1 and 1.5.5 - Evidence of Conducting Worker Health Assessments (Not Individual-Specific Health Assessment Results)</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.2 - Lead Exposure Control Plan</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.3 - Project Schedule</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.4 – Proof of Worker Training Pertaining to Tasks,</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> <li>Made Available on Site During Lead Remediation Activities</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.6 – Filter Performance Documentation</li> </ul>	<ul style="list-style-type: none"> <li>Made Available on Site at the Time of the Pre-Contamination Site Assessment</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.7 – HEPA Filter Information</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> <li>Made Available on Site During Lead Remediation Activities</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.8 – Waste Disposal Procedures</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.5.9 – Health and Safety Plan Including Worker Decontamination Procedures</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>
<ul style="list-style-type: none"> <li>Section 1.6.5 – Respirator Fit Test Records</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> <li>Made Available on Site During Lead Remediation Activities</li> </ul>
<ul style="list-style-type: none"> <li>Section 2.1.4 – Lead Sealant</li> </ul>	<ul style="list-style-type: none"> <li>One Week Prior to Anticipated Lead Remediation Start Date</li> </ul>

## **1.6 PREPARATION**

- .1 The Contractor must ensure that all employees involved in the project pre-planning have thoroughly reviewed the regulations regarding the requirements in the areas of air monitoring, worker protection, disposal of hazardous waste and removal of lead-contaminated debris.
- .2 The Contractor must confirm that all project security, health and safety and first aid requirements have been discussed, reviewed and complied with. The Contractor must ensure the required number of trained first-aid personnel and the proper first-aid equipment is available on site at all times.

- .3 An emergency phone list containing the phone numbers (office, cell, home) of the entire project management team will be prepared, posted on site, and distributed accordingly by the Contractor. The phone list must also contain the police, ambulance and fire emergency numbers. The emergency phone list shall be incorporated into the health and safety plan, to be submitted to the Departmental Representative, and must be made available at the first aid station on site at all times during lead remediation activities.
- .4 The Contractor must ensure all workers fully understand the health hazards associated with lead abatement. The Contractor shall instruct all the lead abatement workers on the necessary safety procedures and protective measures to be used on a lead clean-up project. The Contractor shall instruct each worker how to correctly use all of the necessary equipment (HEPA vacuums, wash station, etc.) that will be made available at all times. Work area supervisors will monitor the workers to ensure their comprehension and ability to safely use this equipment. Evidence of the discussion will be recorded in daily 'tailgate' safety meetings which must be signed by each of the workers present on site.
- .5 The Contractor will review and discuss with all workers on site, the personal protective equipment and respiratory protection requirements for this lead abatement project. The Contractor will introduce and implement the written respiratory protection program developed by the abatement contractor. Each worker must be qualitatively fit tested using irritant smoke or quantitatively fit tested and be assigned a respirator that will provide the worker with a proper face to mask seal (Fit Test Form). Proof of worker fit-testing will be submitted to the Departmental Representative at least one week prior to the anticipated start of lead remediation activities and will be made available on site.
- .6 Ensure all equipment equipped with HEPA filters has been in-place filter tested prior to project commencement and all documentation has been obtained.

## **1.7 REGULATORY REQUIREMENTS**

- .1 Comply with applicable standards and regulations in effect at the time the work is performed. In cases of conflict between applicable standards and these specifications, the more stringent shall apply.
- .2 Referenced regulations include the following:

- .1 Alberta Occupational Health and Safety Act, RSA 2000
- .2 Alberta Regulation 62/2003, Alberta Occupational Health and Safety Regulation
- .3 Alberta Occupational Health and Safety Code 2009
- .4 Environmental Protection and Enhancement Act (Alberta)
- .5 Alberta Regulation 192/96, Waste Control Act
- .6 Transportation of Dangerous Goods Act Regulation
- .7 Canadian Environmental Protection Act
- .8 City of Calgary Municipal Sewer Bylaw
- .3 Referenced standards include:
  - .1 Alberta Employment and Immigration, Workplace Health & Safety, Chemical Hazards Bulletin CH061, *Lead at the Work Site*, July 2009.
  - .2 Department of National Defence (DND), *Decontamination Protocol for Indoor Firing Ranges* January 2003
  - .3 U.S. Occupational Safety & Health Administration (OSHA), Lead Exposure in Construction; Interim Final Rule-Assessment and Compliance Procedures, CPL 02-02-058 – CPL 2-2.58 – 29 CFR 1926.62, December 1993.
- .4 Referenced methods include:
  - .1 American Society of Testing Materials (ASTM) E 1728-10, Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination, ASTM International, West Conshohocken, PA.
  - .2 National Institute of Occupational Safety and Health (NIOSH) Method 9100, Lead in Surface Wipe Samples, NIOSH Manual of Analytical Methods, Current Edition.
  - .3 TCLP-US Environmental Protection Agency (EPA) 40 CFR261, Appendix II, Method 1311.

## **1.8 PROTECTION OF PERSONNEL**

- .1 The Contractor shall develop a project-specific health and safety plan for the project. The plan must specify how worker health will be protected, measures or procedures to be followed in the event of an incident or injury on site, emergency contact information, spill response measures and similar.
- .2 Provide workers and enforcement officers with personal protective equipment including personally assigned respiratory protective equipment with P100 cartridges, disposable coveralls, gloves, eye, head, and foot protection, where required. Workers shall employ a “two suit system”, where the Decontamination Unit (DCU) is separate from the work area.

- .3 No smoking, eating or drinking is allowed in the building.
- .4 Provide the following to employees involved in lead control work:
  - .1 Written information describing potential health hazards related to exposure to lead dust; and
  - .2 Written instruction describing safe work procedures.
- .5 For all lead control work, do the following:
  - .1 Comply with regulatory requirements.
  - .2 Provide workers with not less than a non-powered half-mask respirator equipped with P100 filters and hooded disposable coveralls. Coveralls shall fit snugly around neck, wrists and ankles. Workers shall be fit-tested for an appropriate respirator.
  - .3 Provide workers with two types of gloves. When removing lead particulate use gloves made of two layers of impervious nitrile. When performing any other work use gloves made of leather.
  - .4 Provide workers with CSA-approved safety rubber boots when removing lead and CSA-approved safety boots during all other activities.
  - .5 Allow no one in lead control area during lead removal work unless wearing disposable coveralls, two layers of nitrile gloves, rubber safety boots, and non-powered half-mask respirator equipped with P100 filters.
  - .6 Provide WHMIS labels on all products and a work site binder containing MSDSs for all chemicals used for this work.
- .6 Provide the following safety equipment for the Departmental Representative, as required to permit ready and safe access to work:
  - .1 Disposable coveralls; and,
  - .3 Gloves – nitrile type;

## **1.9 MONITORING AND ASSESSMENT**

- .1 The Departmental Representative will perform the following:
  - .1 Collect submittals and review.
  - .2 Conduct milestone assessments as the lead control work proceeds.
  - .3 Monitor air outside lead control areas.
  - .4 Monitor air during and after lead control work.
  - .5 Monitor surface lead dust levels inside lead control area prior to acceptance of the work.

- .2 The Departmental Representative is authorized to identify deficiencies in the lead control work and provide site instructions to ensure compliance with contract requirements.
- .3 In the event that airborne lead dust exceeds acceptable levels, the Departmental Representative may stop work until corrective actions have been taken and airborne dust levels return to acceptable levels.
- .4 The Departmental Representative may stop work where he has reasonable cause to believe that:
  - .1 Dust levels inside lead control area are unacceptable; and / or
  - .2 Work conditions and practice may lead to:
    - .1 contamination of previously cleaned sections of the building with lead dust; and / or
    - .2 release of lead dust into the environment.

#### **1.10 DAILY AIR MONITORING**

- .1 Before starting any portion of the work, the Departmental Representative will collect background air samples prior to the commencement of lead remediation activities which will be reviewed with all parties involved.
- .2 From the commencement of the lead abatement project until completion of the final cleaning operations, air samples will be collected inside lead work area on a daily basis by the Departmental Representative and analyzed to ensure adequate respiratory protection and work procedures. All daily air sample results will be analyzed on a rush basis, reviewed with the workers and posted on site at the first aid station.
- .3 Workers will assist the Departmental Representative in the collection of air samples. This includes wearing sampling pumps, if required, and the provision of power to run the pumps.
- .4 Results of personal air samples collected inside the work areas will be used to establish the type of respiratory protection to be used. Personal air sample results shall be compared by the Departmental Representative to the "Maximum Use Concentration" (MUC) for the respiratory protective equipment (RPE) observed in use. The Departmental Representative will dictate if RPE shall be upgraded by the Contractor and safe work procedures shall be altered by the Contractor should personal air samples exceed the MUC for the RPE observed in use.
- .5 Results of area air samples collected outside of the work areas or in "Clean Rooms" of the DCU shall be used to ensure work area containment. Area air sample results shall be compared to the "Action Level" for occupational exposure to lead in air. The "Action Level" for lead in air is 50% of the occupational exposure limit (0.025 mg/m<sup>3</sup>).
- .6 If airborne lead levels outside the containment work area exceed the "Action Level" of 0.025 mg/m<sup>3</sup>, work will be suspended and corrections made to reduce the airborne lead levels to as low as reasonably achievable. Clean-up of occupied building areas outside of the containment work area shall be conducted at no additional cost to the Owner.



## **1.11 SURFACE CLEARANCE SAMPLING**

- .1 Following the completion of the surface decontamination procedures, surface clearance sampling will be conducted by the Departmental Representative to determine whether the cleaning procedures have been effective in reducing the residual lead dust concentrations. Presently, there are no Canadian legislated requirements for settled lead dust on exposed surfaces in a public building. Therefore, for the purposes of this project, the Departmental Representative will adopt clearance criteria of 100 µg/ft<sup>2</sup>, set by the Canadian Forces and Department of National Defence (DND), outlined in the document titled *Decontamination Protocol for Indoor Firing Ranges, Chapter 42, Annex A (January 2003)*. Three separate smear campaigns will be conducted to validate the decontamination activities, as recommended in the DND *Decontamination Protocol*.
- .2 If clearance criterion is not met following initial cleaning procedures, the area will be re-cleaned by the Contractor and re-tested by the Departmental Representative. If clearance criterion is not met following re-cleaning procedures, lock-down methods may be employed, or materials may be replaced. Lock-down methods to reduce lead contamination may include the application of an encapsulant to affected areas.

## **2. DESCRIPTION OF WORK**

### **2.1 MATERIAL AND EQUIPMENT**

- .1 Vacuums: HEPA-filtered wet/dry type, with accessories adequate to perform removal and cleanup work.
- .2 Hand Tools and Supplies: scrapers, wire brushes, wiping rags, etc., of adequate quality to perform removal and cleanup work.
- .3 Lead Paint Cleaning Agent: TSP cleaning powder or similar, diluted with water as per manufacturer's instructions.
- .4 Lead Sealer: to CAN/CGSB-1.205-94, Sealer for Application, Class A water-based for spray application, and as follows:
  - .1 Type 2 – surface film forming. The type of sealant to be used must be submitted in writing to the Departmental Representative for review.
- .5 Sheet Polyethylene: minimum 150 micrometres thick.
- .6 Sprayer: garden reservoir type, low velocity, capable of producing a mist or fine spray.
- .7 Duct Tape: good quality, water-resistant plastic type.
- .8 Negative Air Unit: Portable air handling system which extracts air directly from lead work area and discharges air outside building. Unit shall be fitted with pre-filter and HEPA final filter. Air shall pass through a HEPA filter before discharge. Unit shall have pressure differential gauge to monitor filter loading. Unit shall have auto shut-off and warning system for HEPA filter failure. HEPA filter shall have separate hold down clamps to retain filter in place. Unit shall be equipped with a smoke detector auto shut-off.
- .9 The Departmental Representative will visually assess the HEPA filters in use on the project to determine if replacement is necessary. The Contractor will be responsible for replacement of the HEPA filters, as directed.

## **2.2 WARNING SIGNS**

- .1 Provide warning signs and banner tape which state:
  - .1 Lead Removal Area;
  - .2 Access to area is prohibited, except to authorized personnel; and
  - .3 Drinking, eating and smoking are prohibited in the building.
- .2 Obtain approval from Departmental Representative of warning sign and banner tape wording, legibility and location.

## **3. LEAD REMEDIATION WORK**

### **3.1 PREPARATION**

- .1 Lead removal work may commence only after the following have been completed by the Contractor:
  - .1 Existing property, including non-removable equipment and furnishings, surfaces and finishes, have been protected from damage and contamination due to lead removal work.
  - .2 HVAC system has been deactivated and sealed to prevent lead dust from entering the system.
  - .3 Decontamination area is set up and operational.
  - .4 Warning signs and barrier tape have been placed around perimeter of the lead control area and at each potential entrance to the area.
  - .5 A fire extinguisher has been provided in the lead control area. The fire extinguisher will be assessed by the Departmental Representative.
  - .6 All required materials and equipment have been placed in the lead control area for use in lead removal, cleanup and disposal.
  - .7 Departmental Representative has inspected and approved preparations in writing.
- .2 Worker Decontamination Unit (DCU):
  - .1 Worker DCU shall comprise a two-stage system with two airlocks separating the work area from occupied building areas. The purpose of the DCU shall be the decontamination of workers and authorized visitors. The DCU shall be constructed of critical barrier materials and include a "Clean Room" and an "Access Room", as follows:
    - .1 Access Room: Build Access Room between the Clean Room and work area, with two curtained doorways. Install waste receptor and storage facilities for workers' shoes and any protective clothing to be reworn in work area. The Access Room shall be large enough to accommodate specified equipment and worker decontamination procedures.

- .2 Clean Room: Build a Clean Room between the access room and occupied building areas, with two curtained doorways, one to the occupied building area and one to the Access Room. Provide necessary facilities for change and storage of clothing and footwear. Provide storage for clean protective clothing and RPE. Install a mirror to assist workers when donning RPE.
- .2 Container and Equipment DCU:
  - .1 Container and Equipment DCU shall comprise a two stage system with two airlocks separating the work area from occupied building areas. The purpose of the DCU is to provide a means to decontaminate waste containers and equipment. The decontamination unit shall be constructed of critical barrier materials, including wooden 2"x4" framework and polyethylene sheeting.
- .3 Maintenance of DCUs:
  - .1 Maintain DCUs in tidy condition.
  - .2 Ensure that barriers and plastic sheeting are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
  - .3 Visually inspect enclosures at the beginning of each working period.
  - .4 Use smoke methods to test effectiveness of barriers when directed by Departmental Representative.

### **3.2 LEAD REMOVAL**

- .1 Prior to the start of the cleaning procedures, the air handling system (where present) within the designated lead abatement work areas must be shut down and isolated using appropriate lockout procedures.
- .2 All electrical systems within the work areas that can be isolated will be locked out and properly isolated by a certified electrician. All power requirements within the work area will be provided by GFI receptacle panels wired directly into the building's power supply.
- .3 Install and erect barriers at all entrances to the work areas of the building. Signs will be posted where access to the work areas is possible. The signs shall delineate entry and protective equipment requirements and provide warning of potential health consequences.
- .4 Provide an area to be used for decontamination. A wash station and receptacle for contaminated clothing must be provided. Ensure the decontamination area is of adequate size to provide proper storage of workers clothes and personal protective equipment. In the wash station, provide warm water and soap, disposable towels and disposal containers for contaminated and non-contaminated waste.
- .5 Negative air units used will be exhausted to the outside by removing a window in the office work area and through an overhead door in the shop area.

- .6 Following the pre-job set up work, arrange for Departmental Representative to perform a pre-contamination assessment of the work area. A work area supervisor is to accompany the Departmental Representative on the assessment of the work areas and must have any deficiencies fixed immediately.
- .7 The Departmental Representative will conduct a Pre-Entry Safety Meeting at the start of each shift. This brief meeting will provide an opportunity for the entire work crew to discuss any hazard assessments conducted on site, review and/or revise the abatement procedures and fill out the daily safety program paperwork.
- .8 Upon completion of the Pre-Entry Safety Meeting, all work activities may begin. All workers entering the contaminated work area will then don full body disposable coveralls, booties and approved respirators. Other personal protective equipment will include safety glasses, hard hats (if required), and nitrile gloves.
- .9 A half-mask respirator complete with HEPA filters shall constitute the minimum respiratory protection for this type of lead abatement project. All workers must be familiar with the correct use and limitations of the respirators assigned to them. Respirators must be properly fitted and maintained (Fit Test Forms). Facial hair which interferes with the respirator fit is not permitted.

**3.2.1 Rooms 101 and 103**

- .1 All surfaces inside the work area, including concrete floor, drywall wall surfaces, cinder block walls, steel beams, concrete deck, lighting fixtures, space heaters, roof fans (if present) and roof joists will be cleaned by HEPA vacuuming of all surfaces, washing of all surfaces with a lead-specific cleaning agent, and rinsing of all surfaces with clean water.
- .2 Seal exposed concrete floors and ceiling using concrete sealant in accordance with manufacturer's instructions.
- .3 Clean interior surfaces of the HVAC equipment supplying the area, including blowers, terminal units (VAV, dual duct boxes, etc.), and exhaust fans. Apply lead-specific detergent to all internal surfaces, components, condensate collectors and drains using garden reservoir-type sprayer(s). Assure that a suitable operative drainage system is in place prior to beginning wash down procedures. Clean all coils and related components, including evaporator fins following manufacturer's instruction, when available. Wipe with a clean rag. Wipe again with a clean rinse water rag. Dispose of dirty rags in appropriate waste containers.
- .4 Straight-run ducting in the rooms will be cut into manageable sections and wrapped with polyethylene sheeting for disposal. Any HVAC equipment which cannot be removed should be cleaned as per point 3.2.1.3 above.
- .4 All rags and waste liquids used in the cleaning of the Rooms must be properly disposed of as lead waste in appropriate waste containers. The waste containers will then be taken to a designated storage area for disposal.

- .5 Air monitoring in the lead control area and a visual assessment by the Departmental Representative must be completed prior to acceptance of the work and completion of final surface testing.

### **3.3 METHODS OF COLLECTING DEBRIS:**

- .1 Progressively containerize contaminant and contaminated materials as removal work progresses. Do not permit lead waste to accumulate.
- .2 Keep contaminant and contaminated material damp to minimize generation of airborne lead dust.
- .3 Remove lead waste from lead control area at least once per day.
- .4 Check, clean and replace filters at least once per day.

### **3.4 WORKER DECONTAMINATION**

- .1 All abatement workers must be fully trained in the proper decontamination methods to be used on this project. A copy of the written worker decontamination procedures will be submitted to the Departmental Representative and posted in the wash station.
- .2 Before leaving the lead abatement work area and entering the decontamination area, the worker must remove any gross contamination from his/her disposable coveralls using a HEPA vacuum. The worker will then remove his/her boot covers and place them into the lead waste receptacle provided.
- .3 The worker will then proceed into the wash area and remove the disposable coveralls and place them into the disposal receptacle provided.
- .4 The worker will then proceed to the wash station and wash the outer surfaces of his/her respirator and his/her exposed facial areas and hair. Once the respirator has been properly cleaned, the HEPA cartridges can be taped over or disposed as contaminated waste. After a thorough wetting, the respirator can then be removed from the worker's face. The worker will then thoroughly wash his face, neck and head with the soap and water provided.
- .5 The worker can then don his/her street clothes and exit from the DCU. The worker must recheck and properly store his/her respirator.
- .6 Cleaning of Reusable Equipment and Materials: Loose surface lead dust should be removed from equipment, and other reusable items prior to transportation off-site.

### **3.5 WASTE STORAGE, TRANSPORT & DISPOSAL**

- .1 The Contractor will segregate industrial waste from dispersible waste. The Contractor will submit to the Departmental Representative a waste disposal procedure for review. The Contractor will ensure Departmental Representative approves segregation and storage procedures. Dispersible waste shall include contaminated plastic sheeting, rags and other consumable items, disposable coveralls, filters, waste water, detergent solutions and other dust and debris collected during the abatement process.
- .2 The Departmental Representative will report sample results in order to determine classification of waste streams.

- .3 The Contractor will contact Alberta Environment and obtain Generator Registration Number.
- .4 The Contractor will transport hazardous waste in accordance with TDG.
- .5 The Contractor will dispose of hazardous waste and industrial waste in accordance with the requirements of the Waste Control Regulations and authorities having jurisdiction.
- .6 The Contractor will submit landfill permits and waste manifest documentation to the Departmental Representative in a timely fashion to allow compliance with the TDG Act and the Alberta Waste Control Regulation.

### **3.6 FINAL CLEANING**

- .1 Upon completion of lead control work and receiving authorization from the Departmental Representative, the Contractor will perform the following:
  - .1 Remove lead waste from work site.
  - .2 Vacuum and wash contaminated tools and equipment.
  - .3 Clean site to original condition.
  - .4 Make good any damage resulting from the lead work, to the satisfaction of the Departmental Representative.

**END OF SECTION**