

Part 1 General

1.1 SUMMARY

- .1 Comply with requirements of this section when performing following Work:
 - .1 Manual removal of galvanized steel sheet metal on the roof, as indicated in the architectural plans (including the eavestroughs, the downspouts and all accessories), according to the procedures described in this section of the specifications. The sheet metal is covered with lead based paint. No scouring (chemical or physical) is to be used.
 - .2 Manual disassembly of the stone facing, the masonry filling, and the upper section of the brick chimneys one by one according to the procedures described in this section of the specifications and as indicated in the architectural plans. The mortar between the stones contains lead and is friable. The work must be done from the top (exterior) and not from the interior of the attic.

1.2 RELATED REQUIREMENTS

- .1 This section of the specifications is applicable when the worker exposure levels to lead is less than or equal to 0.05 mg/m^3 , the time-weighted average (TWA).
- .2 Section 02 83 12 (Lead Abatement – Maximum Precautions) is applicable for all work in the presence of lead-containing mortar whereby the worker exposure levels to lead is greater than the time-weighted average (TWA), 0.05 mg/m^3 . It should be noted that the Departmental Representative will conduct the sampling as specified in section 3.5.
- .3 The Contractor must coordinate the removal of sections of timbers forming the roof structure with the removal of the panels and the asbestos-cement debris under asbestos conditions as described in Section 02 82 00.01 (Asbestos Abatement – Minimum Precautions) as well as with the removal of sections of timbers forming the roof structure under mould conditions as described in Section 02 85 00.02 (Mould Remediation – Medium Precautions).
- .4 The contractor must submit, for approval by the Departmental Representative, the work sequence and work methods they plan to follow as well as a detailed schedule of the work involving lead abatement. These documents are required in order to obtain the authorization to begin the work.
- .5 Once work has begun on a chimney stack, the work must continue until it has been completed.
- .6 The Contractor must repair all damaged surfaces and replace the material or damaged equipment to the complete satisfaction of the Departmental Representative, in the case where the damage is a result of the work that was executed by the Contractor.
- .7 All lead contaminated waste must be disposed of daily in an acceptable receptacle (see article 2.1.7 – Lead Waste Containers, of these specifications) and subsequently transported to the container reserved for this purpose. Place the waste containers in the area designated by the Departmental Representative. While on-site, ensure the containers are fixed, covered and sealed. The loading zone of the container must be clear at all

times. The container's location will be specified by the Departmental Representative at the first work-site meeting. The waste must be removed from the site daily.

- .8 The Contractor must await the authorization of the Departmental Representative before beginning lead abatement work.
- .9 The Contractor must provide the installation of extra lighting, when needed, that meets CSST requirements.
- .10 The Contractor shall bear all costs of temporary storage, handling, transportation and removal of lead waste.

1.3 REFERENCES

- .1 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .3 Human Resources and Social Development Canada (HRSDC)
 - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5 U.S. Environmental Protection Agency (EPA)
 - .1 EPA 747-R-95-007-[1995], Sampling House Dust for Lead.
- .6 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
 - .1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).
- .7 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
 - .1 Lead in Construction Regulation - 29 CFR 1926.62-[1993].
- .8 Underwriters' Laboratories of Canada (ULC)
- .9 Safety Code for Construction Work (S-2.1, r.4);
- .10 Workplace Health and Safety Regulation (S-2.1, r. 19.01);
- .11 Landfilling and Incineration of Waste Residual Regulation (Q-2, r. 19).

1.4 DEFINITIONS

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

- .2 Authorized Visitors: Departmental Representative.
- .3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation and for protection of underlying surfaces from damage and to prevent lead dust from entering inside the clean area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. The sprayer must be of an appropriate capacity for the scope of work.
- .5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m^3) calculated as 8-hour time-weighted average (TWA). The removal of lead-containing mortar as described in section 1.1 requires that the minimum precautions for lead abatement be used when the airborne lead concentration is less than 0.05 milligrams per cubic meter.
- .6 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace and of taking corrective measures to eliminate them.
- .7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide proof satisfactory to the Departmental Representative that suitable arrangements have been made to dispose of lead based waste in accordance with requirements of the authority having jurisdiction.
- .2 Quality Control:
 - .1 Provide the Departmental Representative the necessary permits for transportation and disposal of lead based waste and proof that the lead based waste has been received and properly disposed.
 - .2 Provide proof satisfactory to the Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, required protective clothing, and aspects of work procedures and protective measures.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead-containing materials, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
 - .1 Require construction work to be in compliance with occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers and visitors in work area include:

- .1 Half mask respirator: half-mask particulate respirator with P-series filter, and 100 % efficiency could be provided.
- .2 Disposable protective clothing which does not trap lead particles nor allow them to penetrate, which includes an overall with a hood and elastic bands at the wrists, heels and neck
- .3 Work gloves.
- .2 Eating, drinking, chewing, and smoking are not permitted in work area.
- .3 Ensure workers wash hands and face when leaving work area. The location of facilities for washing will be designated during the first worksite meeting.
- .4 Visitor Protection:
 - .1 Provide approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate the sheet metal covering, the eavestroughs, the downspouts and all accessories in painted galvanized steel for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .3 Disposal of the lead-containing mortar waste generated by removal activities of the stone facing of the chimneys must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 0.15 mm bags or leak proof drums. Label containers with appropriate warning labels.
- .4 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.8 EXISTING CONDITIONS

- .1 The reports and information regarding lead-containing materials are in an appendix following this section.
- .2 Lead was found in :
 - .1 The pale and the dark paints on the galvanized steel sheet metal on the roof;
 - .2 The mortar of the stone facing of the chimneys.
- .3 It should be noted that the level of lead in the paint and the mortar is greater than 1%. The paint and mortar are thus considered as hazardous materials according to WHMIS (disclosure list) and must be disposed of according to the applicable regulations. These materials may present a health risk and an environmental risk. The management of these materials must therefore be conducted according to the applicable norms, regulations and guidelines.

1.9 SCHEDULING

- .1 No less than two (2) days previous to beginning the work described in this section of the specifications, open the worksite with the Commission de la santé et de la sécurité du travail.
- .2 Inform all sub-contractors of the presence of lead-containing material as identified in the pertinent articles regarding the existing conditions.
- .3 Provide a copy of the worksite opening to the Departmental Representative before beginning the work.

1.10 PERSONNEL TRAINING

- .1 Provide the Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.
- .2 Instruction and training related to respirators includes, at minimum:
 - .1 Proper fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel must have completed required training.

Part 2 Products

2.1 MATERIALS

- .1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping the lead-containing material residue.
- .4 Lead waste containers: metal or fibre types are acceptable to dump operators, with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.
 - .1 Warning labels: bilingual and clearly visible warning labels are to be put on the lead-containing mortar waste when the containers are sealed are ready for removal to disposal site.
- .5 All other equipment required to complete the work.

Part 3 Execution

3.1 SUPERVISION

- .1 One Supervisor for every ten workers is required.
- .2 A supervisor must remain within the work area during any disturbance, removal, or handling of lead containing materials.

3.2 PREPARATION

- .1 Remove and store items to be salvaged or reused.
 - .1 Protect and wrap items and transport and store in area specified by the Departmental Representative.
- .2 Work Zone:
 - .1 Using a high performance vacuum, conduct a pre-cleaning of the storage furniture and all fixed material inside the work zone. Cover these elements with polyethylene sheets and seal the sheets with tape.
 - .2 Protect the floors with polyethylene sheets.
 - .3 Maintain the exits and emergency exits in good condition and free from all obstruction. Otherwise, ensure other exits, satisfactory to a competent body.
 - .4 If the work procedure requires the lead-containing materials to be humidified, the only authorized equipment is manual garden sprayers.
 - .5 Also provide a power supply, with a power on and off command. Provide 24 V safety lighting as well as ground fault switches on the power supply of mechanical tools as stipulated in the pertinent CSA norm. Ensure that the cables and electrical materials are installed safely.
- .3 Do not start work until:
 - .1 Arrangements have been made for disposal of waste.
 - .2 Tools, equipment, and materials waste containers are on site.
 - .3 Arrangements have been made for building security.
 - .4 Notifications have been completed and preparatory steps have been taken.

3.3 LEAD ABATEMENT

- .1 Manually remove the galvanized steel sheet metal on the roof;
 - .1 The use of safety gloves is a supplementary protection measure, so as to not directly contact the paint, during the manual removal of the sheet metal.
 - .2 The galvanized steel sheet metal which are removed must be recycled in a centre certified to receive the sheet metal or to be revalued in a foundry which has the necessary permits to accept such materials. The Contractor shall bear all costs related to transportation and disposal of these materials.
- .2 Disassembly of the stone facing, masonry filling and brick chimney shall be done as follows:

- .1 The disassembly of the stone facing, masonry filling and brick chimneys must be done from the top and not from the interior in the attic, as indicated in the architectural documents.
- .2 Dust mitigation tactics must be instigated such that the workers are not exposed to lead dust (ex.: dust control, work done manually, and vacuum at the dust source).
- .3 Set up a decontamination zone for the workers (ex. designated area) which consists of a decontamination area and a clean locker area as well as the set up of a decontamination area for containers and materials which is indicated by warning tape. These zones can be placed close to the worksite in the areas designated for use by the Contractor.
- .4 The Contractor must ensure that the work enclosure is isolated from the inside areas and that the waste generated during the execution of the work does not leave the enclosure.
- .5 In case of perforation or other problems with the enclosure, work must cease until the enclosure is repaired.
- .6 The contractor must use work procedures which employ dust collection at the source of production or wetting of the work surface with a sprayer, without the use of compressed air, which can emit a fine mist so as to limit lead dust which is emitted into the air.
- .7 The waste materials containing lead must be placed in sealable containers or 0.15 mm thick polyethylene bags. The handling of these waste materials must not create any dust.
- .8 It is strictly prohibited to smoke, eat, drink or chew any and all substances within the work area.
- .9 The lead-containing materials must be managed separately from those which do not contain lead.
- .10 When the work has been completed, the work area and its surroundings must be cleaned with a vacuum with a high performance filter (HEPA) and wet cloths.
- .11 The Contractor must dispose of the lead-containing materials in a certified site which is approved of by the MDDEFLC for reception of such materials and shall bear all costs related to the transportation and disposal of these materials.

3.4 INSPECTION

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by the Departmental Representative will result in work stoppage, at no cost to the Owner.
- .2 The Departmental Representative will inspect work for:
 - .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs to the Owner will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 SAMPLING - WORK AREAS

- .1 Sampling of the workers' exposure during the dismantling of the chimneys will be conducted by the Departmental Representative as follows:
 - .1 The sampling will be conducted according to the IRSST 362 method. The samples will be analyzed according to the NIOSH 7082 method.
 - .2 The Contractor and their sub-contractors must at all times cooperate with the Departmental Representative so as to facilitate the air sampling. The Contractor must be cautious of the Departmental Representative's equipment and will be held responsible for damages to said equipment.
 - .3 During the work on the lead-containing mortar, if the concentration of lead in the worker's respiratory zone is greater than that of the time-weighted average (TWA), 0.05 mg/m^3 , work must be immediately stopped and the procedure as described in Section 02 83 12 (Lead Abatement – Maximum Precautions) must be employed.
- .2 As needed, a final wipe sample on the surfaces specified by the scope of work could be done as follows.
 - .1 Once the work zone has been visually inspected so as to ascertain the overall cleanliness of the zone and the zone has been approved by the Departmental Representative, apply a layer of fixative to the treated surfaces and allow drying for eight (8) hours. After the wait period has passed, the Departmental Representative will take a wipe sample.
 - .1 The results of the sampling described above must show that the lead concentration in the dust sampled is below 40 micrograms per square foot. The samples must be taken and analysed in accordance to EPA norm 747-R-95-007.
 - .2 If the results show that the lead concentration is greater than 40 micrograms per square foot, the zone must be cleaned again, without additional cost for the Owner, and another layer of fixative must be applied to the surfaces, as necessary.
 - .3 Repeat the cleaning operation until the lead concentration is less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

- .1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to the centre of the work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .3 Place polyethylene sheets, tape, cleaning material, protective clothing, and lead contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by the Departmental Representative.

END OF SECTION