

Part 1 General

1.1 PERFORMANCE REQUIREMENTS

- .1 Design:
 - .1 Retain services of Professional Engineer, registered in Province of Alberta for the following:
 - .2 To investigate and provide documented report confirming load bearing capacity of any roads, bridges, and culverts over which structure will be moved.
 - .3 To design structural supports for existing structure and associated work. Design framing and reinforcement, and brace connections to transfer loads of structure to transport carrying equipment.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-moving Conference: Convene one (1) week before starting work of this section.
- .2 Discuss the following:
 - .1 Ascertain the method of determining damage to existing structure and finishes, before and after the move.
 - .2 Identify existing damage to sidewalks, roads, and curbs.
 - .3 Identify method and responsibility for repairs after moving.
 - .4 Review the intended route for moving.
 - .5 Address coordination with affected utility companies.
- .3 Scheduling: Arrange schedule with Departmental Representative's requirements.

1.3 QUALITY ASSURANCE

- .1 Mover: Company specializing in relocating building structures with documented experience.

1.4 REGULATORY REQUIREMENTS

- .1 Arrange with authorities having jurisdiction for traffic control, police escorts, relocation of services; including the following:
 - .1 Arrange for route of move with authorities.
 - .2 To schedule disturbance of overhead utility services on route.

Part 2 Products

2.1 EQUIPMENT

- .1 Equipment and Supports: As required to achieve a successful structure move.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify existing site conditions, surrounding access routes, and conditions of structure to be moved.
- .2 Identify utility services and obstructions to be removed, relocated, or abandoned during progress of the work.
- .3 Verify route load limits to ensure conditions are adequate to support moving loads of structure.
- .4 Damage Determination:
 - .1 Before the move, inspect existing structure thoroughly and notify Departmental Representative in writing of visible defects and factors which could affect safe movement of structure to final location.
 - .2 Compile a list of visible defects to building structure, finishes, accessories, and surrounding properties. This list will form the basis of determining required repair work after the move.
 - .3 Photograph interior surfaces for record purposes.

3.2 PREPARATION

- .1 Prepare site, route of transport, and destination site.
- .2 Coordinate the work of municipal utility disconnection and re-connection with the work of this section.
- .3 Disconnect and cap existing site utility services. Remove overhead or exposed utility services to provide clear working and moving space around and below structure.
- .4 Remove building protrusions prior to move.
- .5 Secure supplementary framing and bracing to structure.
- .6 Secure operating, moving, or suspended items, such as doors, windows, and light fixtures, in a manner to prevent damage to items or to the structure during move.
- .7 Protect elements surrounding the structure from damage or disfiguration.

3.3 RAISE STRUCTURE

- .1 Cut structure free of foundation and portions of structure not being moved.
- .2 Reinforce, brace, and raise structure clear of foundation, in manner to prevent damage.
- .3 Provide necessary framing, bracing, closures, supports, and blocking.

- .4 Secure structure to temporary supporting structural members to prevent shifting of structure during move.

3.4 MOVE STRUCTURE

- .1 Provide transport vehicles for moving structure to new site.
- .2 Move structure, control speed, and provide anchor and restraining devices so that integrity of structure will be maintained.
- .3 During move, protect adjacent structures, and private and public property from damage.

3.5 REINSTALL STRUCTURE

- .1 Position structure over prepared site and lower onto site.
- .2 Remove moving equipment.
- .3 Leave reinforcing, framing, and bracing intact until structure is fully attached and structure loads are supported by new foundation.
- .4 Reinstall building protrusions removed prior to move.
- .5 Adjust structure on foundation:
 - .1 To permit doors to swing freely.
 - .2 So that floor surfaces are level, walls are plumb.

3.6 DAMAGE REPAIR

- .1 Repair damage to structure not identified in writing prior to move.
- .2 Pay all third party claims for incidental damage.

3.7 CLEANING

- .1 Remove moving equipment and materials from original site, final site, and route of travel.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Comply with requirements of this Section when performing following Work:
 - .1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap.
 - .2 Removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter.
 - .3 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding.

1.2 REFERENCE STANDARDS

- .1 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).
- .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 Province of Alberta
 - .1 Lead at Work Site, Occupational Health and Safety, November 2013.

1.3 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 or designated representatives.
- .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. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic metre of air ($50 \mu\text{g}/\text{m}^3$) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic metre (mg/m^3) of air for removal of lead based paint by methods noted.
- .6 Competent person: individuals capable of identifying existing lead hazards in workplace 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.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
- .3 Provide proof of Contractor's General and Environmental Liability Insurance.
- .4 Quality Control:
 - .1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
 - .2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial, Territorial and local requirements pertaining to lead paint, 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 Perform construction 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:
 - .2 Eating, drinking, chewing, and smoking are not permitted in work area.
 - .3 Ensure workers wash hands and face when leaving work area.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .3 Disposal of lead waste generated by removal activities 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.

1.7 EXISTING CONDITIONS

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this project manual.
- .2 Notify Departmental Representative of lead-based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.8 SCHEDULING

- .1 Not later than two days before beginning Work on this Project notify following in writing:

- .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
- .2 Provincial Ministry of Labour.
- .3 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide Departmental Representative copy of notifications prior to start of Work.

1.9 PERSONNEL TRAINING

- .1 Provide Consultant 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 to complete 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 purpose of trapping residual lead paint residue.
- .4 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.
 - .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

Part 3 Execution

3.1 SUPERVISION

- .1 One Supervisor for every ten workers is required.
- .2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

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 Departmental Representative.
- .2 Work Area:
 - .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
 - .2 Pre-clean fixed casework and equipment within work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.
 - .3 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
 - .4 Seal off openings with polyethylene sheeting and seal with tape.
 - .5 Protect floor surfaces covered from wall to wall with polyethylene sheets.
 - .6 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.
 - .7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.
 - .8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
- .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 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with

using power tools non-powered hand tool, other than manual scraping and sanding.

- .2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no entry, activity, ventilation, or disturbance during this period.

3.4 INSPECTION

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

3.5 LEAD SURFACE SAMPLING - WORK AREAS

- .1 Final lead surface sampling to be conducted as follows:
 - .1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Departmental Representative will perform lead wipe sampling.
 - .1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.

- .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
- .3 Repeat as necessary until fibre levels are 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 centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .3 Place polyethylene sheets, tape, cleaning material, clothing, and 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 Departmental Representative.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Comply with requirements of this Section when performing following Work:
 - .1 Removal of lead based paint by scraping or sanding using non-powered hand tools.
 - .2 Manual demolition of lead-painted plaster walls or building components by striking wall with sledgehammer or similar tool.

1.2 REFERENCE STANDARDS

- .1 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).
- .3 Human Resources and Social Development Canada (HRSDC)
 - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
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 - .1 Lead in Construction Regulation - 29 CFR 1926.62-1993.
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1.3 DEFINITIONS

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with 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 or designated representatives and representatives of regulatory agencies.
- .3 Occupied Area: areas of building or work site that is outside Work Area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Airlock: ingress or egress system, without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 metres apart.
- .6 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another. Typically constructed as follows:
 - .1 Place two overlapping polyethylene sheets over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway, and secure other sheet along opposite vertical side of doorway.
 - .2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.
 - .3 Overlap each polyethylene sheet at openings 1.5 metres on each side.
- .7 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) of air calculated as 8 hour time-weighted average (TWA). Intermediate precautions for lead abatement are based on airborne lead concentrations greater than 0.05 milligrams per cubic metre (mg/m^3) of air within Work Area.
- .8 Competent person: individuals capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.
- .9 Lead in Dust: wipe sampling on vertical 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 ($\mu\text{g}/\text{ft}^2$).

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
- .3 Provide: Provincial and local requirements for Notice of Project Form.

- .4 Provide proof of Contractor's General and Environmental Liability Insurance.
- .5 Quality Control:
 - .1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that it has been received and properly disposed.
 - .2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.
 - .3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two days duration, approved by Departmental Representative. Minimum of one supervisor for every ten workers.
- .6 Product data:
 - .1 Provide documentation including test results, fire and flammability data, and WHMIS Safety Data Sheets (SDS) for chemicals or materials including:
 - .1 Encapsulants.
 - .2 Amended water.
 - .3 Slow drying sealer.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to lead paint, 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 Perform construction 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 includes:
 - .2 Requirements for workers:
 - .3 Eating, drinking, chewing, and smoking are not permitted in Work Area.
 - .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.
 - .5 Ensure workers wash hands and face when leaving Work Area.
 - .6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.

- .7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .3 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, 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.

1.7 EXISTING CONDITIONS

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this project manual.
- .2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.8 SCHEDULING

- .1 Not later than two days before beginning Work on this Project notify the following in writing, where appropriate:
 - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
 - .2 Provincial Ministry of Labour.
 - .3 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide Departmental Representative copy of notifications prior to start of Work.

Part 2 Products

2.1 MATERIALS

- .1 Polyethylene: 0.15 mm unless otherwise specified; in sheet size to minimize joints.

- .2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass-reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .4 Slow-drying sealer: non-staining, clear, water-dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.
- .5 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.
 - .1 Label containers with pre-printed bilingual cautionary WARNING LEAD clearly visible when ready for removal to disposal site.

Part 3 Execution

3.1 SUPERVISION

- .1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or other handling of lead based paints.

3.2 PREPARATION

- .1 Remove and wrap items to be salvaged or reused, and transport and store in area specified by Departmental Representative.
- .2 Work Area:
 - .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
 - .2 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
 - .3 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.
 - .4 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
 - .5 Cover floor surfaces in work area from wall to wall with FR polyethylene drop sheets to protect existing floor during removal.
 - .6 Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one curtained doorway when workers enter or exit.
 - .7 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:
CAUTION LEAD HAZARD AREA (25 mm).

NO UNAUTHORIZED ENTRY (19 mm).

WEAR ASSIGNED PROTECTIVE EQUIPMENT AND
RESPIRATOR (19 mm).

BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS
BODILY HARM (7 mm).

- .8 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction.
- .9 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.
- .10 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .3 Worker Decontamination Enclosure System:
 - .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
 - .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of suite, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.
 - .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .4 Construction of Decontamination Enclosures:
 - .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.
 - .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .5 Separation of Work Areas from Occupied Areas
 - .1 Barriers between Work Area and occupied area to be constructed as follows:
 - .1 Construct floor to ceiling lumber or metal stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.

- .2 Cover plywood with polyethylene sheeting and sealed with duct tape.
- .6 Maintenance of Enclosures:
 - .1 Maintain enclosures in clean condition.
 - .2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.
 - .3 Visually inspect enclosures at beginning of each workday.
 - .4 Use smoke test method to test effectiveness of barriers as directed by Departmental Representative.

3.3 LEAD-BASE PAINT ABATEMENT

- .1 Removal of lead based paint to be performed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted plaster walls or building components by striking a wall with sledgehammer or similar tool.
- .2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.
- .5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean work area including equipment and access room, and equipment used in process. After inspection by Departmental Representative, apply continuous coat of slow drying sealer to surfaces. Do not disturb work for 8 hours with no entry, activity, ventilation or disturbance during this period.
- .6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

3.4 INSPECTION

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.

- .2 Departmental Representative will inspect work for:
 - .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When lead dust leakage from Work Area occurs Departmental Representative may order Work shutdown.
 - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 LEAD SURFACE SAMPLING - WORK AREAS

- .1 Final lead surface sampling to be conducted as follows:
 - .1 After Work Area has passed a visual inspection for cleanliness approved by Departmental Representative and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed. Departmental Representative will perform lead wipe sampling in Work Area.
 - .1 Final lead wipe sampling results from horizontal and vertical surfaces where lead based paints have been removed must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples must be collected and analyzed in accordance with EPA 747-R-95-007.
 - .2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
 - .3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

- .1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
- .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Clean-up Work Areas, Equipment and Access Room, and other contaminated enclosures.

- .5 Clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 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 Departmental Representative.

END OF SECTION



July 23, 2018

VIA EMAIL
Ryan.hill@pc.gc.ca

Ryan Hill
902 Patricia Street, Parks Canada
Jasper , AB T0E 1E0

Attention: **Ryan Hill**
 Technical Services Coordinator
 780-931-6451

Re: **Lead Paint in Buildings Assessment**
 902 Patricia Street Houses
 BSS Project: 902PATL

Barrow Safety Services (BSS) performed a lead paint analysis on the paint inside and outside of the building surveyed at the above-referenced building. BSS understands the information is required to determine if lead paint is present prior to demolition commencing.

SCOPE OF WORK

The scope of work included a general inspection and sampling of paint samples and any suspect material that may or is known to contain lead. The survey was performed on July 16, 2018 by Glen Barrow of Barrow Safety Services.

BUILDING CONSTRUCTION

The 1900's building was painted on the outside. The paint on the interior and exterior of the building was tested for lead. The interior was painted drywall and the exterior was painted wood siding.

SURVEY METHODOLOGY

Suspect lead paint materials were identified by visual inspection and the collection of bulk samples. Select samples were collected of paint material suspected to contain lead and verified through laboratory analysis. Enviro-Works Inc. examined the samples by inductively coupled plasma (ICP) following the ASTM E1645-01 and NIOSH 7300 methodology.

LIMITATIONS

Based on the nature of the building construction, limitations exist which would not have an effect on the thoroughness of the survey. This survey came across no limitations for this testing. Only the areas identified by the client were tested.

REGULATION OF LEAD CONTAINING PAINT

Alberta Occupational Health & Safety (OH&S) regulates provincial workers for handling of lead in the workplace and outlines the requirements to include risk assessment, identification, management, work procedures, worker training, PPE, controls and possible air monitoring if required.

Lead containing materials or paint must be removed or sealed and contained prior to any renovation and demolition activities in accordance with appropriate work procedures set out by OH&S and disposed of in accordance with Alberta Environment. Consulting with Barrow Safety Services would need to be done if lead is found to be present. BSS has supplied a removal procedure and BSS would need to have an onsite advisor to observe removal procedure.

SUMMARY OF RESULTS

A total of three (3) samples of suspect lead paint material was collected and analyzed on the house building. Refer to Appendix I for laboratory results and Appendix I for sample location.

Products that contain lead in excess of 600 parts per million are considered hazardous waste and shall be managed in accordance with the OH&S guideline.

PAT910L

Sample #1 – Upstairs Paint – Positive for lead paint (250.2ppm)

Sample #2 – Basement Paint – Positive for lead paint (<18ppm)

Sample #2 – Exterior Paint – Positive for lead paint (7649ppm)

- Above 600ppm the recommended level.

CONCLUSIONS AND RECOMMENDATIONS

1. All lead paint material that was tested and was found to be positive and above the recommended PPM limit, will be treated as lead and follow the lead removal procedure.
2. Dispose of all Lead containing materials in accordance with Alberta Environment.

3. Manage all lead containing materials within the building through the development and implementation of a Lead Management Program. This can be developed through Barrow Safety Services.
4. Follow the Lead removal procedures that are job specific for this building and this job. Barrow Safety can supply a Lead Removal Procedure and proper disposal of the lead containing material. The BSS onsite lead advisor will be sure the lead procedure is followed and adhered to.
5. Encapsulate and seal lead paint prior to removal. Remove lead containing material as whole as much as possible and dispose of at recognized disposal center for lead waste. The Hinton Landfill does accept lead containing material but needs to be approved first through application (landfill manifest).
6. Upon request a Lead Removal Procedure can be provided and needs to be physically observed by a BSS technician.

If you have any questions regarding this report, please contact the undersigned.

Sincerely,

Authored by:

Barrow Safety Services Inc.

Per:



Glen Barrow
Manager
(780)865-7763

File:



18949 111 Ave. NW
Edmonton, Alberta
T5S 2X4
Ph: 780-457-4652
Fax: 1-844-787-7111

Certificate of Analysis

Client: Barrow Safety Services (Hinton)

Project: 902PATL

Date Sampled: July 16, 2018

Sample Taken by: Glen Barrow

Date Submitted for Laboratory Analysis: July 17, 2018

Sample type: Paint Chip

Date Completed: July 18, 2018

Lab ID: 01037

Lab Test Method: ASTM E1613-12 Lead by FAAS

COC: 59787

Sample ID:	Sample #	Description	Lead (mg/kg)
01037-1	1	Upstairs Paint	250.2
01037-2	2	Basement Paint	<18
01037-3	3	Exterior Paint	7649.0

Enviro-Works Inc. is a Proficient Member of the AIHA-ELPAT Program

This analytical report indicates only the results of the materials submitted and tested at our laboratory. Enviro-Works Inc. is not responsible for any consultation or interpretation of the sample results. Enviro-Works Inc. is also not responsible for the procedure(s) used with respect to the sample collection of the tested material(s) submitted or any course of action taken with respect to the results.

Cherie Laplante, B.Sc.

Lab Manager



July 23, 2018

VIA EMAIL
Ryan.hill@pc.gc.ca

Ryan Hill
902 Patricia Street, Parks Canada
Jasper , AB T0E 1E0

Attention: Ryan Hill
Technical Services Coordinator
780-931-6451

Re: Building Material Assessment – Asbestos Survey
902 Patricia Street Houses
BSS Project: 902PATAS

As requested by Ryan Hill, Barrow Safety Services (BSS) performed an asbestos containing materials (ACM) survey at the above-referenced buildings. BSS understands that the information is required for due diligence purposes.

SCOPE OF WORK

The scope of work included a general inspection of the following items:

- structural materials,
- structural components,
- flooring materials, building materials.

Identification of suspect ACM regulated by Occupational Health and Safety was performed through sample collection of suspect materials. The field work was performed on July 16, 2018 by Glen Barrow of Barrow Safety Services.

BUILDING CONSTRUCTION

The building is a one story wood bungalow building with a basement constructed in 1900's. Interior walls and ceilings are comprised of drywall, drywall compound, concrete flooring (basement), lino flooring, and a stipple ceiling on the main floor. The interior

basement ceiling has ceiling tile and the main floor ceiling has stipple. The outside walls are painted wood. The roof is regular shingles. The insulation in the attic is regular batting insulation and blown in insulation and the walls is regular batting insulation.

SURVEY METHODOLOGY

Suspect ACMs were identified by visual inspection, the collection of bulk samples and verification through laboratory analysis. Select samples were collected of each homogenous building material suspected to contain asbestos. Fibreglass insulation and cellulose was identified visually and was not tested. Enviro-Works Inc. examined the samples by polarized light microscopy (PLM) following the NIOSH 9002 methodology.

Visual extrapolation of suspect asbestos containing materials was conducted. If a floor tile size and pattern was observed multiple locations, it was assumed that the sample result is the same (either positive or negative) for both locations. The results for the drywall compound and the stipple ceilings is assumed that both houses are the same material built at the same time.

LIMITATIONS

Based on the nature of the building construction, limitations exist which had an effect on the thoroughness of the survey. The survey did not include demolition and sampling of roofing, mastics, light fixture heat shields, electrical cloth/wiring, caulking or putties or heating & ventilation system.

REGULATION OF ASBESTOS CONTAINING MATERIALS

Alberta Occupational Health & Safety (OH&S) regulates provincial workers for handling of asbestos in the workplace and outlines the requirements to include risk assessment, identification, management, work procedures, worker training and air monitoring.

An asbestos-containing material is defined by OH&S as any manufactured article or other material which contains 1% or more asbestos by weight at the time of manufacture, or which contains 1% or more asbestos.

Asbestos-containing materials must be removed prior to any renovation and demolition activities in accordance with appropriate work procedures set out by OH&S and disposed of in accordance with Alberta Environment.

RESULTS & RECOMMENDATIONS

A total of ten (10) samples of suspect asbestos-containing building materials were collected and analyzed between both houses. Refer to Appendix I for laboratory results of suspect materials. Six of the samples collected by BSS were reported to be **non-asbestos** and four of the samples collected was reported to **contain asbestos**.

902 Patricia Street House (902PATAS)

- Sample #1 – Upstairs Drywall Compound – No Asbestos Detected
- **Sample #2 – Upstairs Drywall Compound 2 – Asbestos Detected**
 - Chrysotile Asbestos – <1%
- Sample #3 – Upstairs Drywall Compound 3 – No Asbestos Detected
- **Sample #4 – Upstairs Ceiling Stipple – Asbestos Detected**
 - Chrysotile Asbestos – <1%
- Sample #5 – Upstairs Bathroom Lino – No Asbestos Detected
- Sample #6 – Upstairs Kitchen Countertop – No Asbestos Detected
- **Sample #7 – Basement Drywall Compound – Asbestos Detected**
 - Chrysotile Asbestos – <1%
- **Sample #8 – Basement Drywall Compound 2 – Asbestos Detected**
 - Chrysotile Asbestos – <1%
- Sample #9 – Basement Bedroom Ceiling Tile – No Asbestos Detected
- Sample #10 – Exterior Concrete – No Asbestos Detected

*There may be traces of vermiculite under the insulation in attic in sparatic spots.

Asbestos-containing materials must be removed prior to renovation and demolition activities by a qualified contractor in accordance with appropriate work procedures and disposed of in accordance with Alberta Environment. Occupational Health & Safety must be notified in writing before the removal, encapsulation or enclosure of any asbestos containing material. Barrow Safety Services can be contacted for further direction on how to go about asbestos abatement, demololition or renovation.

All asbestos containing materials within the building must be managed through the development and implementation of an Asbestos Management Program. Barrow Safety Services can be contacted for further direction on this Management Program.

If you have any questions regarding this report, please contact the undersigned.

Sincerely,

Authored by:



Barrow Safety Services Inc.

Per

Glen Barrow

Manager

(780)865-7763 Office

File: 902 Patricia Street_asbestos survey report



Certificate of Analysis

Bulk (ACM) Identification:

Visual ID (Area Estimation) NIOSH 9002 : Issue 2

Revision# : 1

Client:

Barrow Safety Services

Client Project Name: 902PATAS

Report Date: July 17, 2018

Samples Collected: July 16, 2018

Date Received: July 17, 2018

Turn Around Requested: Rush 3 hr

Date Analyzed: July 17, 2018

Contact:

Glen Barrow

COC#:

59786

EWI Log #	Sample #	Client Sample Information	Phases/Color/Fibrous/Non-Fibrous/Homogeneity	Asbestos Content Type & %	Other Materials Detected	Analyst
116374-1	1	Upstairs Drywall Compound	100% White chalky mix/ non homogenous/ non fibrous	ND	NFM	CL
116374-2	2	Upstairs Drywall Compound 2	100% White chalky mix/ non homogenous/ non fibrous	Chrysotile <1	NFM	CL
116374-3	3	Upstairs Bathroom Drywall Compound 3	100% White chalky mix/ non homogenous/ non fibrous	ND	NFM	CL
116374-4	4	Upstairs Ceiling Stipple	100% White chalky mix/ non homogenous/ non fibrous	Chrysotile <1	NFM	CL
116374-5	5	Upstairs Bathroom Lino	100% Beige vinyl sheet with beige backing/ non homogenous/ fibrous	ND	Cellulose, NFM	CL
116374-6	6	Upstairs Kitchen Countertop	100% Brown/Beige hard sheet/ homogenous/ non fibrous	ND	NFM	CL
116374-7	7	Basement Drywall Compound	100% White chalky mix/ non homogenous/ non fibrous	Chrysotile <1	NFM	CL
116374-8	8	Basement Drywall Compound 2	100% White chalky mix/ non homogenous/ non fibrous	Chrysotile <1	NFM	CL
116374-9	9	Basement Bedroom Ceiling Tile	100% Brown compressed mat/ homogenous/ fibrous	ND	Cellulose	CL
116374-10	10	Exterior Concrete	100% Grey hard mix/ non homogenous/ non fibrous	ND	NFM	CL

Enviro-Works Inc. is accredited by CALA to ISO/IEC 17025. For scope of Accreditation Visit: www.enviro-works.com

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COC#:

59786

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ND=None detected

NFM=Non fibrous material

VM=Vermiculite & mica

GF=Glass fibre

MW=Mineral wool

P=Perlite

SF=Synthetic fibre

*=Estimated percentage of
asbestos is <0.1%

Reviewed By:



Cherie Laplante, B.Sc.
Lab Manager

