



# NEW WESTMINSTER

October 7, 2016

**ADDENDUM #1**  
**NWIT-16-38**  
**Exterior Stair Replacement**  
**Queen's Park Arena, New Westminster, BC**

This addendum modifies the Invitation to Tender only as noted:

**SPECIFICATIONS**

<ADD>

Section 02 82 13 Hazardous Materials Abatement (21 pages following).

**CLARIFICATIONS**

1. The Owner will appoint and pay for the Concrete testing agency and geotechnical consultant.
2. Making good of the landscaped areas will be by the Owner. The contractor is to fill all excavations with native soil flush to adjacent grades.
3. The Owner will trim trees and bushes as required to perform the work.
4. The Owner will locate and identify all underground services prior to the start of excavation.
5. The contractor will need to hand dig where excavating within the tree or bush canopy drip zone to avoid damage to roots.
6. The contractor is to erect orange barrier fencing at the perimeter of all tree and bush canopy drip lines, and avoid damaging the trees and bushes.

Please acknowledge this addendum on page 2 of 4 in the Bid Form.

**END OF ADDENDUM #1**

Yours truly,

Heather M. Rossi  
Intermediate Buyer

Section 02 82 13

16-10-03

## HAZARDOUS MATERIALS ABATEMENT

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## 1.0 GENERAL

### 1.1 DOCUMENTS

1.1.1 This Section of the specification forms part of the Contract Documents and is to be read, interpreted, and coordinated with all other parts.

### 1.2 SCOPE OF WORK

1.2.1 Work under this Contract covers all work activities including but not limited to the removal, disposal, encapsulation, enclosure, handling of, or work activities in close proximity to building materials that contain lead paint.

1.2.2 During the time of hazardous material handling (work at risk of disturbing hazardous building materials), the Abatement Contractor shall coordinate work, and take full responsibility for the health and safety of all personnel working in the contracted areas.

1.2.3 Workers must wear appropriate respiratory protection while performing work activities that are at risk of disturbing lead paint or other hazardous materials. Consequently, workers within the work area will be required to wear respiratory protection acceptable to the Workers' Compensation Board of British Columbia and Astech Consultants Ltd.

1.2.4 All scaffolding systems used on this project, shall be designed by a professional engineer, registered in the province of British Columbia. Once the scaffolding has been erected, and prior to use by other trades, the scaffolding engineer shall inspect the scaffolding and issue a signed and sealed letter to Astech Consultants Ltd., stating that the scaffolding has been erected in accordance with his design, is structurally sound, and in accordance with the Workers' Compensation Board of British Columbia requirements.

### 1.3 DESCRIPTION OF WORK

The Work under this Contract shall be performed as described in the Technical Specifications and Contract Documents. The Work shall include but not necessarily be limited to the following:

1.3.1 Supply all labour, materials, services, and equipment, necessary to safely conduct all surface preparation work of lead painted surfaces for re-painting by the General Contractor from the designated areas of the buildings as described below, and associated activities. The Contractor and his sub-trades shall work multiple shifts and weekends, if necessary to ensure completion on schedule. Cost of multiple shifts and weekends shall be included within the tendered price.

#### 1.3.3 BASE BID

##### 1.3.3.1 General Notes

- a) It is the intent of this specification to conduct all abatement work related to lead painted surfaces (some of which are multi-layered) in and/or in proximity to the Contracted Areas. This Section of the Specification must be read in conjunction with all other parts of the Contract Documents.
- b) The Abatement Contractor shall carry at least five (5) million dollars of Environmental Impairment Liability Insurance, and General Liability Insurance in the amount of five (5) million dollars, unless there is a more stringent requirement in the Tender Documents. Evidence of such insurance in such form as may be required by the Owner shall be lodged with the Owner prior to the commencement of any work. The Contractor will indemnify the City of New Westminister, its representatives, agents, and advisors, and their respective directors, officers, and employees, at all times from and against all damages, losses, injuries, penalties, fines, assessments, claims

(including third parties), actions, costs, expenses, proceedings, demands and charges, whether arising under statute, contract, or at common law, which result from, are caused or contributed to by, or are suffered or sustained in connection with, the removal and disposal of the hazardous materials and related work activities. The City of New Westminster and Astech Consultants Ltd. are to be named as additional insured under the Environmental Impairment Liability Insurance Policy and the General Liability Insurance required to be carried by this Contractor.

- c) Air sampling in accordance with the Workers' Compensation Board of British Columbia requirements during surface preparation activities will be performed by the Owner's Consultant.
- d) There are potential asbestos containing sealants, mastics, and/or caulking in and/or around windows and doors, and other hazardous building materials at the building that are not to be disturbed or damaged during this project.
- e) The asbestos containing materials analyzed during Astech Consultants' site investigation of the Contracted Areas are attached (following this Specification Section).
- f) The paints analyzed for lead during Astech Consultants' site investigation of the Contracted Areas are attached (following this Specification Section).
- g) Coordinate all work with the General Contractor.

#### 1.3.3.2 LEAD BASED PAINT

- a) Prior to work by unprotected trades, the Abatement Contractor shall scrape and/or sand the flaking/deteriorating lead paints/primers on wood doors, wood door trim, and concrete wall surfaces in proximity to (at, below, and within 6 feet surrounding) the 3 west exit stairs in a manner that controls the release of lead paint. As well, paint debris on or in proximity to the 3 west exit stairs shall be cleaned up by HEPA filtered vacuum equipment. Once scraping and/or sanding is completed to an acceptable standard for re-painting, apply a coat of pre-approved exterior primer to encapsulate those surfaces in preparation for re-painting by others at a later date under separate contract.
- b) The Abatement Contractor shall conduct all surface preparation work (scraping, sanding, etc.) as and when required for the re-painting of the metal hand railings with lead paint/primer at the 3 west exit stairs in a manner that controls the release of lead paint.
- c) As required for the project, remove items attached to metal, wood, and/or concrete at risk of disturbing lead paint/primer for the dismantling of the 3 existing west exit stairs in a manner that controls the release of lead paint.
- d) As required for the project, attach anchors and/or drill holes through metal, wood, and/or concrete at risk of disturbing lead paint/primer, or remove the lead paint in proximity, for the anchoring of the 3 new west exit stairs in a manner that controls the release of lead paint.
- e) Lead paints/primers removed from surfaces during this project shall be removed from site at the end of each shift.
- f) The removed lead containing materials shall be disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

#### 1.4 RELATED WORK

- 1.4.1 Not Applicable.

## 1.5 TERMINOLOGY (Definitions)

1.5.1 Air Monitoring - The process of measuring the fibre and/or lead content of a known volume of air collected during a specific period of time, in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

1.5.2 Airlock - A system for permitting ingress or egress without permitting air movement between a contaminated area and a non-contaminated area, typically consisting of two curtained doorways at least six (6) feet (1.83 metres) apart. Proper use of an airlock dictates that one passes through the first doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

1.5.3 Asbestos - A term used to identify a group of fibrous silicates. The most common types of asbestos are, Chrysotile, Amosite, and Crocidolite. Other types of asbestos are Actinolite, Anthophyllite, and Tremolite.

1.5.4 Asbestos Banner Tape - A pre-manufactured three (3) inch wide white polyethylene banner tape imprinted (red and black) with "DANGER - ASBESTOS - Cancer and Lung Disease Hazard - Authorized Personnel Only - HEPA Respirators And Protective Clothing Are Required In This Area"

1.5.5 Asbestos Containing Materials - A manufactured material containing one half percent (0.5%) or more asbestos by weight at time of manufacture, or other materials that contain one half percent (0.5%) or more asbestos as determined by X-ray diffraction or optical polarizing analytical techniques, with the exception of vermiculite which is defined as "any asbestos".

1.5.6 Asbestos Warning Sign - A sign, readable from twenty-five feet, stating: CAUTION ASBESTOS, Cancer and Lung Disease Hazard, Authorized Personnel Only, HEPA Filtered Respirators and Protective Clothing are Required in This Area.

1.5.7 Amended Water - Water with a non-ionic surfactant added for the purpose of reducing surface tension to allow thorough wetting of asbestos containing materials and/or materials with lead paint.

1.5.8 Authorized Visitor - The Owner, the Owner's authorized representative, or a representative of any regulatory or other agency having jurisdiction over the project.

1.5.9 Clean Room - A non-contaminated area or room which is part of the worker decontamination enclosure facility, with provisions for storage of workers' street clothes and clean protective equipment.

1.5.10 Consultant (Asbestos Abatement Consultant and/or Hazardous Materials Consultant) - Astech Consultants Ltd.

1.5.11 Containment - An isolation system designed to effectively contain asbestos fibres and/or lead paint within a designated work area where asbestos containing materials and/or lead paint on building materials are handled, removed, encapsulated, or enclosed.

1.5.12 Crated - Plywood self supporting structure built over equipment or materials of sufficient strength to protect such equipment or materials from damage or contamination for the duration the project.

1.5.13 CSA - Canadian Standards Association.

1.5.14 Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of reinforced polyethylene sheeting over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Two curtained doorways spaced a minimum of six (6) feet (two metres) apart form an airlock.

- 1.5.15 DOP Test - Dioctyl Phthalate aerosol challenge of a HEPA filter. A DOP test is used to establish the integrity and effectiveness of a HEPA filter to collect particles greater than or equal to 0.3 microns in diameter with 99.97% efficiency.
- 1.5.16 Decontamination Enclosure Facility - A series of connected rooms, separated from the work area and from each other by airlocks, for the decontamination of workers, materials, and equipment.
- 1.5.17 Disposal Bag - A minimum 6 mil (0.15 mm) thick polyethylene bag that is labelled with the following information: hazardous materials; health hazards; and respirator and/or clothing protection required.
- 1.5.18 Dispose Of - As defined by the latest edition of the British Columbia Environmental Management Act, Hazardous Waste Regulation, and the latest edition of Transport Canada's - Transportation of Dangerous Goods Regulations.
- 1.5.19 Duct Tape - Minimum two (2) inch wide cloth reinforced duct tape.
- 1.5.20 Encapsulant (Sealant) - A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibres from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- 1.5.21 Encapsulation - The application of an encapsulant to asbestos containing materials to control the release of asbestos fibres into the air.
- 1.5.22 Enclosure - The construction of an airtight, impermeable, permanent barrier around asbestos containing materials to control the release of asbestos fibres into the air.
- 1.5.23 Equipment Decontamination Enclosure System - That portion of a decontamination enclosure facility designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom, holding area, and non-contaminated area.
- 1.5.24 Equipment Room - An area or room which is part of the worker decontamination enclosure facility, with provisions for storage of contaminated clothing and equipment.
- 1.5.25 Fibre Concentration - The number of fibres per volume (ml) of air collected.
- 1.5.26 Fibre Density - The number of fibres per area (mm<sup>2</sup>) of filter.
- 1.5.27 Fixed Object - A unit of equipment or furniture in the work area which cannot be removed.
- 1.5.28 Friable Material - A material, when dry, that can easily be crumbled or powdered by hand pressure.
- 1.5.29 Glove Bag Technique - A method with limited applications for removing small amounts of asbestos containing material from HVAC ducts, pipe runs, valves, joints, elbows, and other non-planar surfaces in a non-contained (isolated) work area. The glove bag assembly is a manufactured device consisting of glove bag (typically constructed of six (6) mil transparent polyethylene or polyvinyl chloride plastic), two (2) inward projecting long sleeves, and internal tool pouch, and an attached labelled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibres released during the process. All workers who are permitted to use the glove bag technique must be highly trained, experienced, and skilled in this method.
- 1.5.30 Ground Fault Interrupt Electrical Panel (GFI) - An Electrical panel, outside the work area, equipped exclusively with "Class A" ground fault circuit interrupter breakers of sufficient capacity to provide for lighting and equipment used during work.

- 1.5.31 HEPA (High Efficiency Particulate Air) Filter - A throw-away extended-media dry-type filter in a rigid frame, having minimum particle-collection efficiency of 99.97% for 0.3 micrometer (micron) thermally-generated dioctyl phthalate (DOP) particles or specified alternate aerosol, and a maximum clean-filter pressure drop of 1.0" WG when tested at rated air flow capacity.
- 1.5.32 HEPA Vacuum Equipment - A vacuum system equipped with HEPA filtration.
- 1.5.33 High Risk Work Procedures - As defined by the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.
- 1.5.34 Holding Area - A chamber between the washroom and an non-contaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.
- 1.5.35 HVAC System - Heating Ventilation & Air Conditioning system.
- 1.5.36 Lead Paint - WCB defines lead-containing surface coating material as a paint or other similar material that dries to a solid film that contains over 90 PPM (90 mg/kg or 90 µg/g or 0.009%) dry weight of lead.
- 1.5.37 Moderate Risk Work Procedures - As defined by the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.
- 1.5.38 Movable Object - A unit of equipment or furniture in the work area which can be removed from the work area.
- 1.5.39 Negative Pressure Ventilation Unit - A portable exhaust system equipped with HEPA filtration capable of maintaining a constant low velocity air flow into contaminated areas from adjacent non-contaminated areas. The minimum acceptable negative air pressure differential between the work area and adjacent non-contaminated areas is 0.02 inches of water column.
- 1.5.40 NIOSH - National Institute for Occupational Safety and Health (U.S.).
- 1.5.41 Owner - The Owner, building Owner, or his authorized representative.
- 1.5.42 Permissible Concentration (for Asbestos) - The time-weighted eight hour maximum level of exposure that is considered to be a safe level for unprotected personnel.
- 1.5.43 Removal - All herein specified procedures necessary to strip all asbestos containing materials from the designated areas and to dispose of these materials in an acceptable manner.
- 1.5.44 Respirator - A device worn by a person which prevents that person from inhaling harmful airborne substances.
- 1.5.45 Risk of Exposure to Asbestos Fibres - The likelihood of being exposed to airborne asbestos fibres when asbestos containing materials are used or handled.
- 1.5.46 Scaffold - A temporary elevated or suspended work unit and its supporting structure used for supporting worker(s) or materials, or both.
- 1.5.47 Shower Room - A room between the clean room and the equipment room in the workers decontamination enclosure facility, with hot and cold running water controlled and regulated at the shower head, and suitably arranged for complete showering during the decontamination sequence.
- 1.5.48 Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

- 1.5.49 Tape - Minimum two (2) inch wide cloth reinforced duct tape.
- 1.5.50 Trades Person - A worker who has received proper and adequate training in his or her particular field, is fully qualified, and of which 80% of the work force has a minimum of one year experience.
- 1.5.51 WCB - Workers' Compensation Board of British Columbia (WorkSafeBC).
- 1.5.52 Waste Transfer Airlock - A decontamination system utilized for transferring containerized waste from the inside to the outside of the work area.
- 1.5.53 Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.
- 1.5.54 Work Area - Designated rooms, spaces or areas of the project in which asbestos and/or lead abatement procedures are to be undertaken or which may become contaminated as a result of such abatement procedures. A "High Risk Work Area" is a work area which has been sealed, isolated with reinforced polyethylene and equipped with a worker decontamination facility. A "Moderate Risk Work Area" is a controlled access work area which has not been isolated or equipped with a worker decontamination facility.
- 1.5.55 Worker Decontamination Facility - A decontamination enclosure facility for workers, typically consisting of a connected clean room, shower room, and equipment room, separated by airlocks.

## 1.6 APPLICABLE REGULATIONS AND GUIDELINES

- 1.6.1 All work under this contract shall be done in strict accordance with all applicable Federal, Provincial, Local regulations, and other standards and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.
- 1.6.2 The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict between the requirements and these specifications exists, the most stringent requirements shall apply.
- 1.6.3 Codes and Standards:
- a) Canadian Standards Association (CSA)
  - b) Underwriters Laboratories, Canada (ULC)
  - c) American Society for Testing and Materials (ASTM)
  - d) National Building Code
  - e) British Columbia Building Code
  - f) Canadian Electrical Code
  - g) Requirements for High Voltage Installation
  - h) Workers' Compensation Board of British Columbia "Occupational Health & Safety Regulation"
  - i) British Columbia Environmental Management Act, Hazardous Waste Regulation
  - j) Transport Canada - Transportation of Dangerous Goods Regulations
  - k) Workers' Compensation Board of British Columbia publication Lead-Containing Paints and Coatings - Preventing Exposure in the Construction Industry

## 1.7 SUBMITTALS AND NOTICES

Prior to Commencement of Work the Contractor shall:

- 1.7.1 Send written notification of proposed work activities involving asbestos and/or lead, to the applicable Occupational Hygiene Officer at the Workers' Compensation Board of British Columbia (standard "Notice of Project" forms are available for this purpose) including site specific work procedures, risk



assessment, and exposure control plan, not fewer than three (3) normal working days prior to the commencement of any on site work activity. Provide Astech Consultants Ltd. with a copy of this notice, at the same time that it is sent to the Workers' Compensation Board of British Columbia.

1.7.2 When applicable, send written notification of proposed work activities involving asbestos and/or lead, to the regional office of Labour Canada, not fewer than five (5) working days prior to the commencement of any on site work activity. Provide Astech Consultants Ltd. with a copy of this notice.

1.7.3 Submit proof satisfactory to the Owner and Astech Consultants Ltd. that all required permits, site location, and arrangements for transport and disposal of asbestos and/or lead contaminated materials, PCB's, and/or Mercury, have been obtained, as applicable.

1.7.4 Submit to Astech Consultants Ltd., a copy of the carriers "Licence to Transport Hazardous Waste" (a copy of this licence must be kept in each transport vehicle/trailer).

1.7.5 Submit a Critical Path Work Schedule to Astech Consultants Ltd. prior to delivering equipment or materials to the site.

1.7.6 Submit to Astech Consultants Ltd., shop drawings for layout and construction of the worker decontamination facilities and barriers for isolation of the work areas in compliance with these specifications and applicable regulations, if applicable.

1.7.7 Submit to Astech Consultants Ltd., shop drawings for scaffolding and/or exterior hoarding or hoarding/enclosures, if required for this project, in compliance with these specifications and applicable regulations, if applicable.

1.7.8 Submit to Astech Consultants Ltd., a copy of the "DOP" (Dioctyl Phthalate) test results for all HEPA filtered equipment on site.

"DOP" testing of negative air units used for High Risk work must be conducted after installation on site but prior to use on this project.

"DOP" testing of negative air units used for Dust Control for non-asbestos related demolition work must be conducted after installation on site but prior to use on this project.

"DOP" testing of negative air units used for Moderate Risk work must be conducted within sixty (60) calendar days prior to use on this project.

"DOP" testing of HEPA filtered vacuum systems designed to convey bulk materials (eg. Vec-Loader) used for High Risk, Modified Moderate Risk, or Moderate Risk work, must be conducted on site prior to use on this project.

Other HEPA equipment must be "DOP" tested within sixty (60) calendar days prior to use on this project.

Additional DOP testing of all HEPA filtered equipment shall be conducted and documented every ninety (90) calendar days from the last test date, for the duration of the project or when HEPA filters are replaced.

1.7.9 Submit to Astech Consultants Ltd., and post on site, a list containing the names and telephone numbers of the Contractor's key personnel.

1.7.10 Submit to Astech Consultants Ltd., and post on site, a list containing the names, addresses, and telephone numbers, of emergency response personnel. The list shall include, but not be limited to, ambulance, hospital, fire department, police department, and building security.

1.7.11 Submit documentation to Astech Consultants Ltd., that the Contractor's employees, including foreman, supervisors, and any other personnel or agents who may be exposed to airborne asbestos

fibres/lead, have received adequate training in the safe handling of asbestos and/or lead containing materials, as applicable.

1.7.12 Submit documentation of NIOSH approvals for all respiratory protective equipment utilized on site, include manufacturers certification of HEPA filtration capabilities for all cartridges and filters.

1.7.13 Submit copies of all "Hazardous Waste Manifest" forms for the transportation and disposal of all contaminated waste materials removed from the work area during the abatement process. Registered "Waste Generator Number" will be provided by the Owner and must be listed on each manifest prior to transport of waste.

1.7.14 Submit documentation of respirator fit-testing for all Contractor employees and agents who must enter the work area. This fit-testing shall be in accordance with CSA Standard Z94.4 1982.

1.7.15 Submit manufacturer's specification data sheets and material safety data sheets, for all products and materials prior to use on this project.

1.7.16 Submit manufacturer's certification that vacuums, portable ventilation equipment, and other equipment required to contain airborne fibres are equipped with HEPA filtering systems as specified.

1.7.17 Submit documentation to Astech Consultants Ltd., signed by a certified electrician, stating that all electrical power within the work area has been isolated or identified, the Ground Fault Interrupt (GFI) electrical panel has been installed properly and is in good working order, and that all temporary power cables and electrical lighting cables have an operational ground wire and are in good working condition, in accordance with article 3.3.1.4 of this Section.

1.7.18 When rental equipment is to be used in abatement work areas or to transport asbestos and/or lead contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy issued to Astech Consultants Ltd.

1.7.19 With the Owner, inspect the premises wherein all abatement and abatement related activities will occur and submit a statement signed by both, agreeing on building and fixture condition prior to the commencement of work. If this document is not submitted to Astech Consultants Ltd., it is assumed that the Contractor is reporting no damage to the building prior to the start of work.

1.7.20 If required, submit to Astech Consultants Ltd., a copy of the Contractor's Confined Space Entry procedures, in accordance with the Workers' Compensation Board of BC "Occupational Health & Safety Regulations" for Confined Spaces.

## 1.8 SITE SECURITY

1.8.1 Work area access shall be restricted to authorized, trained, and protected personnel. Authorized personnel are limited to the Contractor's employees, employees of Subcontractors, the Owner and his representatives, representatives of Astech Consultants Ltd., and representatives of Federal and Provincial regulatory agencies having jurisdiction over the project. A list of authorized personnel shall be established prior to project start and posted in a conspicuous location near the entrance to the work area.

1.8.2 Entry into the work area by unauthorized individuals shall be reported immediately to the Owner and Astech Consultants Ltd.

1.8.3 Access to "High Risk" work areas shall be through a single worker decontamination enclosure system. All other means of access (doors, windows, hallways, corridors, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out airlock which shall be sealed except during the removal of containerized asbestos waste from the work area, and emergency exits in case of fire or accident. Emergency exits shall not be locked from the inside, however, they shall be sealed with polyethylene and tape until needed.

1.8.4 The Contractor shall be responsible for site security for the duration of the project.

## 1.9 EMERGENCY PLANNING

1.9.1 Emergency procedures shall be in written form and prominently posted in a conspicuous location at the entrance to the work area. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

1.9.2 Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, heat stress, confined spaces, and general injury situations.

1.9.3 Fire extinguishers shall be placed strategically throughout the work area enclosure at the rate of; two ten pound (10 lb.) ABC dry chemical fire extinguishers for the first one thousand (1000) square feet of floor area, or portion thereof; and one ten pound (10 lb.) ABC dry chemical fire extinguisher per every additional two thousand (2000) square feet of floor area, or portion thereof. In addition to the fire extinguishers inside the work area enclosure, a minimum of two ten pound (10 lb.) ABC dry chemical fire extinguishers shall be placed outside the work area enclosure, preferably in the Clean Room.

1.9.4 Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1.9.5 For non life threatening situations, employees injured or otherwise incapacitated, shall decontaminate following normal procedures, with assistance from fellow workers if necessary, before exiting the work area to obtain medical treatment.

1.9.6 Where a life threatening medical emergency arises in an asbestos work area, usual protective measures should be temporarily ignored if they would otherwise cause an immediate threat to the workers' life or recovery, e.g. removal of respirators for mouth to mouth resuscitation, or leaving worker fully clothed if spinal injury is suspected. Where protective equipment and clothing can be left in place without interfering with the emergency management of the injured worker in a contaminated work area, it should not be removed until a non-contaminated area has been reached. On site decontamination procedures should only be carried out if they do not interfere with medical emergency procedures. When first aid, ambulance, or other emergency personnel are required to enter a contaminated work area, they shall be informed of the hazards, provided with and instructed in the use of respirators and protective clothing, and instructed in entry and exit procedures. If it is not possible to decontaminate the injured worker, he shall be covered in such a way to minimize contaminating clean areas. The cover should not hinder access to the patient by first aid or ambulance personnel. If the injured worker is contaminated with asbestos on arrival at hospital, the hospital staff must be informed and advised of the hazards related to asbestos, the appropriate disposal of contaminated clothing, and decontamination procedures.

1.9.7 Telephone numbers of all emergency response personnel, and Contractor's key personnel shall be prominently posted at the entrance to the work area, along with the location of the nearest telephone.

1.9.8 The Contractor shall provide and maintain first-aid services, equipment, and supplies according to the requirements of the Occupational Health and Safety Regulation. For the purpose of determining the level of first aid required, the number of workers on site shall include the Owner's representatives and employees of the Consultant.

## 1.10 PERSONNEL PROTECTION

1.10.1 Prior to commencement of asbestos and/or lead abatement activities, all personnel MUST have received adequate training in the handling of asbestos containing materials and/or lead paint (as applicable), and MUST be able to read and fully understand the written (and posted) Site Specific Work Procedures and Emergency Procedures for the project. Astech Consultants Ltd. reserves the right at any time to test all personnel to ensure adequacy of asbestos/lead training.

1.10.2 Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

1.10.3 Respirators shall be suitable for the asbestos/lead exposure level in the work area in accordance with this specification and the requirements of the Workers' Compensation Board of British Columbia. Where respirators with disposable filters are employed, provide sufficient filters for replacement as recommended by the manufacturer, and applicable regulations.

1.10.4 Provide authorized visitors with suitable protective clothing, applicable safety equipment and footwear, and respiratory protection complete with new filters or cartridges, as described within this specification, so as they may safely access the work area whenever required.

1.10.5 Workers and authorized visitors must be trained in the maintenance, use and limitations of their respirators. Workers and authorized visitors must also be fit tested on personally issued and individually marked respirators, using a protocol acceptable to the Workers' Compensation Board of British Columbia and Astech Consultants Ltd. Fit testing is to be conducted and documented prior to the start of asbestos/lead related work activities and on a weekly basis for the duration of the project.

1.10.6 Workers and authorized visitors must perform positive and negative air pressure fit tests each time a respirator is worn. Powered air purifying respirators shall be tested for adequate flow in accordance with the manufacturers' written instructions.

1.10.7 No supervisors, authorized visitors, or workers shall wear facial hair that could interfere with the respirator to face seal.

1.10.8 Workers and authorized visitors shall be provided clean dry socks, or clean dry disposable Tyvek booties, for each entry into the work area.

1.10.9 Provide workers with sufficient suits of protective full body clothing. Such clothing shall consist of full body coveralls and headgear, that fits snugly at the neck, wrists and ankles. Provide eye protection and hard hats as required by applicable safety regulations. Non disposable type protective clothing and footwear shall be left in the "Work Area" or "Equipment Room", until the end of the asbestos and/or lead abatement work shift, at which time such items shall be disposed of as asbestos and/or lead waste, or shall be thoroughly cleaned of all asbestos and/or lead containing material. Disposable type protective clothing, headgear, and footwear may be provided.

1.10.10 Provide and post, at the entrance to the "Work Area", the site specific entry, exit, and work procedures to be followed by workers, as described within this specification.

1.10.11 The Abatement Contractor's designated Site Superintendent must remain on site at all times while abatement activities are being performed. Since there may be a requirement for two work crews, it is therefore required that the Contractor state in the Tender Documents, the names of the site superintendents that the Contractor is proposing to use on this project.

## 2.0 PRODUCTS

### 2.1 MATERIALS

2.1.1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.

2.1.2 Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination. Replacement materials shall be stored outside the work area until asbestos and/or lead abatement is completed.

2.1.3 Damaged, deteriorating or previously used materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos and/or lead shall be disposed of in accordance with the applicable regulations.

2.1.4 Reinforced polyethylene sheeting for walls and stationary objects shall be a minimum of 6 mil (0.15 mm) thick. Floors and all other applications shall incorporate sheeting of at least 12 mil (0.30 mm) and 10 mil (0.25 mm) thickness, as specified, in widths selected to minimize the frequency of joints.

2.1.5 Method of attaching reinforced polyethylene sheeting shall be agreed upon in advance by the Contractor and Astech Consultants Ltd., and selected to minimize damage to equipment and surfaces. Method of attachment may include any combination of cloth reinforced duct tape, furring strips, spray glue, staples, nails, screws or other effective procedures capable of sealing adjacent sheets of polyethylene and capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).

2.1.6 Reinforced polyethylene sheeting utilized for worker decontamination facility shall be black, or other non transparent colour.

2.1.7 Asbestos and/or lead waste receptor: each waste receptor shall consist of two separate impermeable containers. The first (inner) container shall consist of a 6 mil (0.15 mm) minimum thickness polyethylene bag. If the waste being placed into the first container is abrasive or has sharp edges that may cut the first container, the debris shall be placed into a cardboard box or burlap sack (or similar device) prior to being placed within the first (inner) container. The second (outer) container shall consist of a 6 mil (0.15 mm) polyethylene bag. The second (outer) container shall be such to prevent any perforating rips, or tears in the container during transport or disposal. The outer container must bear a pre-printed label and otherwise be acceptable to the disposal site, BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation, and the Workers' Compensation Board of British Columbia.

2.1.8 Asbestos Warning signs shall be displayed at all conceivable locations where access to the work area is possible. Such signs shall be conspicuously located and shall read:

**CAUTION • ASBESTOS**  
**Cancer and Lung Disease Hazard**  
**Authorized Personnel Only**  
**HEPA Filtered Respirators and**  
**Protective Clothing Required in this Area**

Although the Asbestos Warning Signs are to be displayed in conspicuous locations, they are to be kept out of view of building occupants/public, and additional construction signage that appropriately restricts access to affected work areas shall be displayed in conspicuous locations beyond the Asbestos Warning Signs.

2.1.9 Lead Warning signs shall be displayed at all conceivable locations where access to the work area is possible. Such signs shall be conspicuously located and shall read:

**CAUTION • LEAD**  
**Authorized Personnel Only**  
**HEPA Filtered Respirators and**  
**Protective Clothing Required in this Area**  
**Breathing Lead Dust May Cause Serious Bodily Harm**

Although the Lead Warning Signs are to be displayed in conspicuous locations, they are to be kept out of view of building occupants/public, and additional construction signage that appropriately restricts access to affected work areas shall be displayed in conspicuous locations beyond the Lead Warning Signs.

2.1.10 Surfactant [wetting agent] shall be mixed with water in a concentration to provide complete penetration and saturation of asbestos and/or lead containing material.

2.1.11 Slow drying sealer: glue or sealer which remains tacky on surface for minimum of 8 hours under ideal conditions for purpose of trapping residual airborne fibre during settling period. Sealer applied to substrate surfaces scheduled for re-insulation to be compatible with the latter product.

2.1.12 Spray or Trowel Applied Fire Resistant Materials: ULC labelled and listed, asbestos free mineral fibre or cementitious material to provide the degree of fire protection required by the applicable building codes. Fire resistant materials shall be evaluated and approved by Astech Consultants Ltd., prior to the materials being delivered to the project site.

2.1.13 Spray or trowel applied thermal insulation or acoustical material shall be asbestos free and shall provide performance characteristics equivalent to or better than the original material. Thermal and acoustical materials shall be evaluated and approved by Astech Consultants Ltd. prior to the materials being delivered to the project site.

2.1.14 Encapsulation materials shall comply with CGSB 1-GP-205M requirements, and be approved by the Owner prior to the materials being delivered to the project site.

2.1.15 Enclosure systems shall be constructed of materials so that when the enclosure is completed there is limited potential for impact damage to the barrier, and no potential for fibre or dust release. Enclosure materials shall be evaluated and approved by Astech Consultants Ltd. prior to the materials being delivered to the project site.

2.1.16 Provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

## 2.2 TOOLS AND EQUIPMENT

2.2.1 A sufficient quantity of negative air pressure ventilation units equipped with HEPA filtration shall be utilized so as to provide a minimum of one (1) workplace air change every fifteen (15) minutes. Negative air pressure units shall be exhausted outside the building, in such a manner so as not to allow exhaust air to migrate back into the building or near occupied areas.

2.2.2 Provide local exhaust ventilation with exhaust air discharged through a HEPA filter for all dust producing operations **outside** a containment where asbestos, asbestos containing dust, lead paint, or lead paint dust is handled or used.

2.2.3 Respiratory protection during all stages of the project must be in compliance with the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.

2.2.4 Full bodied impermeable disposable coveralls complete with attached head covering, designed to fit snugly at the neck, wrists, and ankles. Standard of acceptance - Dupont Tyvek or equivalent. Disposable coveralls shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

2.2.5 Non skid laceless rubber boots that are to remain in the work area until the completion of the asbestos and/or lead abatement phase of the project, at which time they shall be disposed of as contaminated waste, or be thoroughly decontaminated with soap and water.

2.2.6 Additional safety equipment (e.g. hard hats, eye protection, safety shoes, gloves etc.), as necessary, shall be provided to all workers and authorized visitors.

2.2.7 A sufficient supply of scaffolds, ladders, lifts, and hand tools (e.g. scrapers, wire cutters, brushes, utility knives, wire saws, mops, rags, and sponges, etc.) shall be provided as required.

2.2.8 Suitable spray equipment shall be provided for the application of amended water, and sealer as required.

2.2.9 A sufficient supply of HEPA filtered vacuum systems shall be available during all stages of the project.

2.2.10 Encapsulant shall be sprayed using airless spray equipment. Airless equipment and tip size shall be in accordance with the encapsulant manufacturer's recommendations.

2.2.11 All water hoses used by the Contractor shall be 250 psi industrial grade rubber water hose with factory installed fittings. The water supply shall be turned off at the tie-in to the Owner's water source, when the water is not in use, or at the end of each work shift. The water hose lines shall not be under pressure when the Abatement Contractor is not on site. The water hose lines shall be secured and made safe if they pass through an occupied area of the building.

2.2.12 A two stage water filtration pumping system designed to filter contaminants from decontamination shower water shall be utilized in conjunction with the worker decontamination shower units. The water filtration system shall be capable of pumping sufficient quantities of water to insure that the worker decontamination shower units do not overflow. The first stage water filter of the water filtration system shall be capable of removing particles 100 microns or larger, and the second stage filter shall be capable of removing particles 5 microns or larger.

### 3.0 EXECUTION

#### 3.1 HIGH RISK EXECUTION - ASBESTOS

3.1.1 Not Applicable.

#### 3.2 MODERATE RISK EXECUTION - ASBESTOS

3.2.1 Not Applicable.

#### 3.3 MODERATE RISK EXECUTION - LEAD

##### 3.3.1 Moderate Risk Work Area Preparation

3.3.1.1 Clearly mark the boundary of the Work Area by placing Barrier Tape or fences around the Work Area.

3.3.1.2 Lead Warning signs at all conceivable approaches to work areas and other location where airborne concentrations of lead may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit all personnel to read the sign and take the necessary protective measures to avoid exposure, however, see Article 2.1.9 of this Section.

3.3.1.3 Shut down, isolate, and lock out all heating, cooling and air conditioning system (HVAC) components that are in, supply, or pass through the work area. Seal all intake and exhaust vents in the work area with tape and polyethylene. Also seal any seams in system components that pass through the work area.

If the mechanical system cannot be shut down and isolated, obtain approval from the Owner to cut the ducts at the perimeter of the work area enclosure and cap the ends of the ducts with sheet metal and seal with tape. Seal all ends of ducts and/or vents in the work area with tape and polyethylene. Also seal seams in system components that pass through the work area.

3.3.1.4 Shut down and physically lock out all existing electric power and equipment within the work area enclosure and other areas wherever and whenever there is a danger of electrical shock. Coordinate this activity with the local engineering supervisor. Provide temporary power and lighting sources with "Class A" Ground Fault Circuit Interrupters (GFI). All temporary power cables and electrical light cables shall have

ground wires. Ensure safe lock out of existing electrical power and installation (including ground faulting) of temporary power sources and equipment in compliance with all applicable electrical code, and regulatory board requirements. Prior to Astech Consultants pre-contamination inspection, the Contractor shall have his electrical Subcontractor provide written documentation on company letterhead, to Astech Consultants Ltd., stating that all electrical power within the work area has been isolated, the Contractor's GFI panel has been installed properly and is in good working order, and that all temporary power cables and electrical lighting cables have an operational ground wire (two wire brewery cables will not be allowed in the work area). See article 1.7.17 of this Section.

3.3.1.5 Establish a decontamination area at one or more entrances to the Moderate Risk Work Area. The decontamination area (also called washout facility) shall contain a reinforced polyethylene drop sheet, polyethylene disposal bag, bucket of warm water and sponge, and/or a HEPA filtered vacuum cleaner.

3.3.1.6 Commencement of work at risk of disturbing lead shall not occur until:

- a) All pre-abatement submissions, notifications, posting and permits have been provided and are satisfactory to Astech Consultants Ltd..
- b) Approved Lead Warning signs are displayed at all conceivable entrances to the work area.
- c) An adequate supply of equipment and materials for abatement, clean-up, and disposal are on hand.
- d) All worker training, and respirator fit testing is completed, documented and copies have been submitted to Astech Consultants Ltd..
- e) Contractor receives written permission from Astech Consultants Ltd. to proceed with abatement activities.
- f) If and as required, local exhaust systems are functioning adequately.

### 3.3.2 Isolation of the Work Area for Modified Moderate Risk Work

3.3.2.1 The work area shall be separated from non-contaminated, or occupied areas of the building by the construction of air tight barriers.

3.3.2.2 During lead abatement activities all polyethylene barriers enclosing the work area shall be inspected at least twice daily by the Contractor; prior to the start of each day's abatement activities and following the completion of the day's abatement activities. The Contractor shall record these inspections in his site log book.

3.3.2.3 Damage and defects in the isolation barrier enclosure system are to be repaired immediately upon discovery.

3.3.2.4 Use smoke tubes to test the effectiveness of the barrier system daily, or when directed by Astech Consultants Ltd.

3.3.2.5 If at any time during abatement activities air monitoring or visual inspection indicates that areas outside the work area enclosures are contaminated with lead, or if damage occurs to the work area barriers, work shall immediately stop, and the cause of the problem shall be rectified. Clean up of surfaces outside of the work area using HEPA vacuums or wet cleaning techniques may be necessary.

3.3.2.6 Install and initiate the operation of negative pressure ventilation equipment in accordance with the WCB publication Lead-Containing Paints and Coatings - Preventing Exposure in the Construction Industry to provide a minimum of one (1) air change in the work area every fifteen (15) minutes. Minimum acceptable negative air pressure differential is 0.02 inches of water column. Openings made in the isolation barrier



system to accommodate negative air units shall be made airtight with tape and/or caulking as required. Ensure that adequate power supply is available at all times to satisfy the requirements of the negative air pressure ventilating units. Exhaust ducts of negative air pressure ventilation units shall be sealed and mechanically fastened to the exhaust port of the unit(s). Negative pressure ventilation units shall be exhausted to the outside of the building, in such a manner so as not to allow exhausted air to migrate back into the building or near occupied areas. Negative pressure ventilation equipment shall be DOP tested in accordance with Article 1.7.8.

The exhaust ducts from the negative air pressure ventilation units to the exterior of the building, shall be aluminized mylar flexible spiral duct with a 6 mil polyethylene tube insert on the inside the spiral duct, or pre-approved equivalent. The exhaust ducts, when passing through areas of the building occupied by the public or building staff, shall be enclosed by a solid barrier of 3/8" plywood, painted off-white. The wood enclosure shall be constructed and located to suit current National Building Code requirements regarding headroom and means of egress.

To facilitate the exhausting of air from the negative air pressure ventilation exhaust ducts to the exterior of the building, glazing units may be removed from windows. The glazing units shall be replaced with a plywood infill panel, cut to suit the window and exhaust duct, and of sufficient thickness to provide complete security to the building. The thickness of the plywood infill panel (depending upon location and security requirements), and the location of the glazing units that are to be removed, shall be pre-approved by the Owner. The Contractor shall be responsible for building security for the duration of the project, especially during the time that the glazing units are removed. The windows shall be replaced by the Contractor, utilizing qualified glazing trades persons.

3.3.2.7 Once constructed, sealed, and reinforced as necessary, the work area enclosure may be smoke tested for leakage by Astech Consultants Ltd. prior to the commencement of abatement activities. Required repairs or reconstruction shall be initiated to ensure absolute isolation of the work area.

3.3.2.8 Commencement of work at risk of disturbing lead shall not occur until; enclosure systems have been constructed, tested and approved by Astech Consultants Ltd.; negative pressure ventilation systems are functioning adequately, and specified negative air pressure differential has been established; and approved Lead Warning signs are displayed at all conceivable entrances to the work area.

### 3.3.3 **Lead Abatement**

3.3.3.1 Before beginning work, remove visible dust from surfaces in the work area where dust is likely to be disturbed during the course of the work. Use HEPA vacuum, or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate. Do not use compressed air to clean up or remove dust from any surface.

3.3.3.2 Prevent the spread of dust from the work area using measures appropriate to the work to be done. Use reinforced polyethylene drop sheets over flooring and objects that are to remain in the work area.

3.3.3.3 Other than loose material which shall be removed by HEPA vacuum, material containing lead to be removed or disturbed shall be thoroughly wetted before and during work. Use garden reservoir type low velocity fine mist sprayer. Perform work in a manner to reduce dust creation to lowest levels practicable.

3.3.3.4 Lead and/or lead contaminated building materials that may cut or puncture the polyethylene disposal bag, shall be placed in cardboard boxes or burlap sacks prior to being double bagged.

3.3.3.5 Place waste containing lead in sealed impermeable disposal bags. Drop sheets and disposable protective clothing shall be treated as lead waste and shall be wetted and folded to contain dust, then placed in disposal bags.

3.3.3.6 Large components removed intact may be wrapped in two separately sealed layers of reinforced polyethylene sheeting, sealed and secured with duct tape, and labelled prior to transport.

**3.3.4 Entry and Exit Procedures**

3.3.4.1 All workers and authorized visitors, before entering the work area, shall be trained in and familiar with all regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures.

3.3.4.2 Workers and authorized visitors shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of lead or lead contaminated materials and until final clean up is completed.

3.3.4.3 All workers and authorized visitors shall, prior to entering the work area, put on appropriate respiratory protection (as deemed adequate for the project conditions), clean disposable coveralls, head covering and foot covering. Hard hats, eye protection, and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

3.3.4.4 Eating, drinking, chewing, and smoking, are not permitted in the work area or decontamination facility. Smoking on the Owner's property will only be allowed in designated areas if approved by the Owner.

3.3.4.5 Before leaving the work area workers shall decontaminate their protective clothing using a HEPA vacuum or by damp wiping. Store clean protective clothing in clean plastic bag for reuse, or, if protective clothing is not to be reused, dispose of as contaminated waste.

3.3.4.6 Workers shall wash hands and face immediately upon leaving the work area.

**3.3.5 Clean Up**

3.3.5.1 Frequently during the work and immediately after completion of the work clean up dust and waste containing lead using a HEPA vacuum or by damp wiping.

3.3.5.2 Place lead containing waste in sealed disposal bags. Drop sheets and disposable protective clothing shall be treated as lead waste and shall be wetted and folded to contain dust and then placed in disposal bags.

3.3.5.3 Immediately before their removal from the work area, and disposal, clean each filled disposal bag using damp cloths or HEPA vacuum and place in second clean disposal bag.

3.3.5.4 Seal and remove double-bagged waste from site. Dispose of lead waste in accordance with requirements of Provincial and Federal authority having jurisdiction.

3.3.5.5 Place polyethylene, tape, cleaning materials, and other contaminated debris in disposal bags for transport to the landfill site.

3.3.5.6 When removing polyethylene sheeting, the material shall be carefully rolled away from the walls to the centre of the work area. As polyethylene is removed from the work area, all surfaces shall be HEPA vacuumed or wet cleaned.

3.3.5.7 Perform final thorough clean up of work areas and adjacent areas affected by the work using HEPA vacuum.

3.3.5.8 At the completion of the clean up operation, the Contractor and Astech Consultants Ltd. shall inspect the work area to ascertain that no dust or debris remains on surfaces as a result of dismantling or clean up operations.

### 3.3.6 Air Monitoring

3.3.6.1 From commencement of work until completion of the clean up operation, Astech Consultants Ltd. will be conducting air monitoring both inside and outside the work area.

3.3.6.2 Air sampling collection and analysis shall be conducted in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

3.3.6.3 If airborne dust levels exceed maximum use concentration specified for the respirator in use, or the occupational exposure limit for unprotected workers outside of the Lead Work Area, the work will be halted. The contractor will have to modify work practices to observe the maximum use concentrations specified.

3.3.6.3 The fibre level in areas outside the Moderate Risk work areas, where there has been no disturbance of lead containing materials, shall not be permitted to exceed the WCB 8 hour exposure limit (EL) of 0.05 mg/m<sup>3</sup>.

3.3.6.4 The fibre level in the Moderate Risk work area shall not be permitted to exceed the WCB 8 hour exposure limit of 50 mg/m<sup>3</sup>.

3.3.6.5 Notify Astech Consultants Ltd. that the work area is ready for post abatement air monitoring.

3.3.6.6 If required, post abatement ambient monitoring will be conducted by Astech Consultants Ltd. If air sampling determines that lead levels in the work area are equal to or less than the WCB 8 hour exposure limit (EL) of 0.05 mg/m<sup>3</sup>, the Contractor may proceed with the final clean up.

3.3.6.7 If air monitoring or visual inspection determines that areas outside the work area are contaminated, these areas shall be maintained and cleaned, in the same manner as that applicable to the work area.

## 3.4 DISPOSAL

3.4.1 Asbestos containing waste, contaminated building materials or equipment, and water used in the Work Area, shall be sealed and labelled in double 6 mil polyethylene bags, for transport to the landfill site.

3.4.2 Lead paint containing waste, contaminated building materials, and water used in the Work Area, shall be sealed and labelled in double 6 mil polyethylene bags, for transport to the appropriate landfill or treatment site.

3.4.3 As the work progresses, to prevent exceeding available storage capacity on site, sealed and labelled containers of asbestos and/or lead containing waste shall be removed and transported to the pre-arranged disposal location.

3.4.4 Copies of all transportation manifests or other documentation of disposal shall be delivered to the Owner for his records. Copy 2 (green) of the waste manifest shall be provided to Astech Consultants Ltd. The waste manifest form shall be signed by the Contractor and the Disposal Site Operator, as the responsibility for the material changes hands. If a separate carrier is employed, his name, address, telephone number and signature shall also appear on the waste manifest form.

3.4.5 Personnel loading or off loading asbestos and/or lead containing waste shall be protected by disposable clothing including head and body protection, and a minimum of a half facepiece, air-purifying, dual cartridge respirators equipped with HEPA filters.

3.4.6 Any debris or residue observed on containers or surfaces outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and/or wet methods as appropriate.

3.4.7 If large metal dumpsters are used for asbestos and/or lead containing waste disposal, they shall be equipped with doors and tops that can be closed and locked to prevent vandalism and provide security during transportation. Unbagged material, or non hazardous waste, shall not be placed in these containers. Bags shall be placed, not thrown, into these containers to avoid splitting. Disposal bins shall not be filled more than one foot (305 mm) from the top of the bin. Disposal bins (doors) shall be sealed in order to prevent water leakage.

3.4.8 Following the removal of all containerized waste, the cargo area shall be decontaminated using HEPA vacuums and/or wet cleaning methods.

### 3.5 RE-ESTABLISHMENT OF WORK AREA SYSTEMS AND OBJECTS

3.5.1 In coordination with the local engineering supervisor, re-establish HVAC, mechanical and electrical systems in proper working order. Re-establish objects and fixtures that were moved to temporary locations. Decontaminate filter assembly using HEPA vacuums and wet cleaning techniques. Supply and install new filters in HVAC systems, if required. Dispose of old filters as asbestos waste, if applicable.

3.5.2 Repair all areas of damage that occurred as a result of abatement activities.

3.5.3 Where applicable, a qualified sub-trade shall re-install all safety equipment such as fire alarm systems, heat and/or smoke detectors, fire-fighting equipment, emergency lighting, and exit lighting.

**END OF SECTION**



# ASBESTOS BULK SAMPLE REPORT

Date: September 26, 2016  
Client: CITY OF NEW WESTMINSTER  
Location: Queens Park Arena  
1<sup>st</sup> Street and 3<sup>rd</sup> Avenue  
New Westminister, BC

Comments: 1) Analyzed as per NIOSH 9002, except for Vermiculite as per EPA/600/R-04/004.  
2) WCB defines asbestos containing material as 0.5% or more asbestos, with the exception of Vermiculite which is defined as "any asbestos".  
3) Sample(s) will be disposed of after 90 days, unless the Client requests otherwise.

Sample(s) Collected on September 20, 2016

Sample	Location	Description	Layer: Colour	Non-Asbestos		Asbestos	
				%	Type	%	Type
16411BS01	Exterior (near Centre West Side Stairwell)	Paint/Coating (on Concrete Wall)	1: Mid Grey	100%	Non-Fibrous	None	Detected
			2: Cream	100%	Non-Fibrous	None	Detected

Analyst(s): Jesse James



American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)  
Astech Consultants Ltd. Laboratory Participant ID# 200542



## LEAD (in Paint) BULK SAMPLE REPORT

Date: September 26, 2016  
Client: CITY OF NEW WESTMINSTER  
Location: **Queens Park Arena**  
**1<sup>st</sup> Street and 3<sup>rd</sup> Avenue**  
**New Westminister, BC**

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Comments: 1) Analyzed by X-Ray Fluorescence (XRF) with direct read PPM.  
2) Sample results report lead only.  
3) WCB defines lead-containing surface coating material as a paint or other similar material that dries to a solid film that contains over 90 PPM (90 mg/kg or 90  $\mu$ g/g or 0.009%) dry weight of lead.  
4) Samples will be disposed of after 25 days, unless the client requests otherwise.

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Sample(s) Collected on September 20, 2016

**Bulk Sample # 16411LS01 : Exterior - West Side Stairwell (at Centre)**  
Sample Type : Paint/Primer (Purple on Blue, Brown, & Orange) (on Metal Railing)  
Result : **1,641 PPM**

**Bulk Sample # 16411LS02 : Exterior (near Centre West Side Stairwell)**  
Sample Type : Paint/Coating (Mid Grey on Cream) (on Concrete Wall)  
Result : **126 PPM**

**Bulk Sample # 16411LS03 : Exterior - At Top of West Side Stairwell (at South)**  
Sample Type : Paint (Mid Grey on Blue & Cream) (on Wood Door)  
Result : **1,354 PPM**

**Bulk Sample # 16411LS04 : Exterior - At Top of West Side Stairwell (at South)**  
Sample Type : Paint (Mid Grey) (on Wood Door Moulding)  
Result : **6,818 PPM**

Analyst: Gina Foley