## Part 1 General

### 1.01 SUMMARY

.1 Refer to the Asbestos Assessment, attached in E3, for information pertaining to asbestos-containing materials (ACMs) that have been identified and may require disturbance during the Work:

.2 The Asbestos Assessment indicates that ACMs including, but not limited to, the following are present, which may be impacted as part of the Work.

.1 Cementitious piping.

.3 Abatement shall be conducted to handle, alter, remove and/or dispose of ACMs as identified in the Asbestos Assessment only to the extent that such identified ACMs will be impacted (handled, altered, damaged, removed) by the Work.

.4 Abatement shall be conducted in accordance with applicable regulations, guidelines, standards and/or best practices for such work, including, but not limited to, the following:

.1 Government of Manitoba:

.1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work.

.2 Manitoba Hazardous Waste Regulation MR 55/2003.

.2 SAFE Work Manitoba:

.1 Guide for Asbestos Management, 2020.

.5 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of ACMs that will be impacted by the Work of this contract.

.6 Inclusion of a particular ACM in this specification is not necessarily confirmation that it will require disturbance, alteration, handling, removal or disposal. The actual methods to be used by the Contractor to complete the general Work of this Project may impact how and to what extent various ACMs will require disturbance, alteration, handling, removal or disposal.

.7 Unless otherwise determined through risk assessment conducted by the Contractor's Competent Worker, comply with requirements of this section when performing Work that would be considered "Type 2" asbestos abatement work as defined in the SAFE Work Manitoba 2020 "Guide for Asbestos Management" for tasks where it is expected that asbestos fibres may be released as a result of the work activity and work can be carried out in less than 3 hours, including, but not limited to:

.1 Using non-powered hand tools to cut, shape, drill or remove a Non-Friable manufactured ACM if water is not used to control fibre release.

.2 Removing part of a false ceiling to gain access to a work area and where Friable ACM is, or is likely to be, lying on the surface of the false ceiling.

.3 Removal, encapsulating, enclosing or disturbance of a minor amount (less than 1 $m^2$) of Friable ACM during the repair, alteration, maintenance, demolition or dismantling of a building, structure, machine, tool or equipment if the work is carried out in less than 3 hours.

.4 Removal of Non-Friable asbestos material (e.g., stucco finish) where the material must be cut, broken, or otherwise damaged and become Friable as a result of the removal process.

.5 Performing glove bag operations.

.6 Any other asbestos abatement work not mentioned in Type 1 or Type 3 that may result in the release of asbestos fibre as a result of the work activity, and that may cause a worker exposure in excess of the occupational exposure limit.

.8 Deviation from the procedures outlined in this specification must be approved by the Contract Administrator prior to implementation.

.1 The Contractor may choose to combine tasks outlined in this specification section with other tasks being completed under more stringent procedures provided that the procedures of the more stringent section will prevail for all “combined” work.

**1.02 SECTION INCLUDES**

.1 Requirements, applicable procedures and personal protective equipment to be utilized during abatement of ACMs as outlined herein.

**1.03 RELATED REQUIREMENTS**

.1 Section 02 81 01 - Hazardous Materials Use and Abatement

.2 Section 02 41 19.14 - Selective Demolition for Minor Works

.3 Section 02 82 00.01 Asbestos Abatement Requirements Type 1 Work Procedures

.4 E3 - Asbestos Assessment

**1.04 REFERENCES**

.1 Department of Justice Canada (Jus)
.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).
.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

.3 Government of Manitoba
.1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB 217/2006).
.2 Manitoba Hazardous Waste Regulation MR 55/2003.

.4 SAFE Work Manitoba
.1 Guide for Asbestos Management, 2020.

**1.05 DEFINITIONS**

.1 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials that contain asbestos in amounts as listed below, and are identified under Existing Conditions including fallen materials and settled dust:

.1 A friable material containing 0.1% or greater asbestos;

.2 A non-friable material containing 1.0% or greater asbestos; and

.3 All vermiculite insulation must be treated as an ACM.

.4 Asbestos Work Area: area where work takes place which will or may disturb ACMs.

.5 Authorized Visitors: Contract Administrator, and representatives of regulatory agencies.

.6 Competent Worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Curtained Doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:

.1 Place two overlapping sheets of Polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of Polyethylene with duct tape and weight bottom edge to ensure proper closing.

.3 Overlap each Polyethylene sheet at openings not less than 1.5 m on each side.

.8 DOP Test: testing method used to determine integrity of negative pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.

.9 Friable Material: means material that:

.1 When dry, can be crumbled, pulverized or powdered by hand pressure, or

.2 Is crumbled, pulverized or powdered.

.10 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.

.11 Negative Pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.

.1 System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.

.12 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.13 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.

## 1.06 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof that all asbestos workers and/or supervisor have received appropriate training from a Competent Worker in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Instruction and training related to respirators includes, at minimum:

.1 Fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration.

.8 Submit Worker's Compensation Board status and transcription of insurance.

.9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:

.1 Encapsulants.

.2 Amended Water.

.3 Slow drying sealer.

.10 Submit proof satisfactory to Contract Administrator that employees have respirator fitting and testing. Workers must be fit tested with respirator that is personally issued.

**1.07 QUALITY ASSURANCE**

.1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Full-facepiece powered, air purifying respirator (PAPR) with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a

respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the Contractor and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn.

.3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.7 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

**1.08 WASTE MANAGEMENT AND DISPOSAL**

.1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.

.4 Separate for reuse and recycling and place in designated containers steel, metal, and/or plastic waste.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for recycling.

.8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

**1.09 EXISTING CONDITIONS**

.1 Reports and information pertaining to ACMs that have been identified and may be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification in Appendix A, and/or are available from the Contract Administrator.

.2 Notify Contract Administrator of suspected ACM discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Contract Administrator.

**1.10 SCHEDULING**

.1 Hours of Work: perform work during normal working hours as indicated in Contract Documents.

**Part 2 Products**

**2.01 MATERIALS**

.1 Drop and Enclosure Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 FR Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with Polyethylene.

.2 Glove bag:

.1 Acceptable materials: safe-T-Strip products in configuration suitable for Work, or Alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.

.2 The glove bag to be equipped with:

.1 Sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period.

.2 Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.

.3 A tool pouch with a drain.

.4 A seamless bottom and a means of sealing off the lower portion of the bag.

.5 A high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable Polyethylene bag or where glove bag method is used, glove bag itself.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable Polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.

.4 Tape: tape suitable for sealing Polyethylene to surfaces under both dry and wet conditions using Amended Water.

.5 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 asbestos fibres.

.1 Sealer: flame spread and smoke developed rating less than 50.

.6 Encapsulant: penetrating type conforming to CAN/CGSB-1.205.

## Part 3 Execution

### 3.01 PREPARATION

.1 Asbestos abatement work is to be completed in general accordance with the requirements of the SAFE Work Manitoba 2020 “Guide for Asbestos Management”. Where discrepancies exist between that document and these specifications, the more stringent will apply.

.2 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.

.3 Notification to Manitoba Workplace Safety and Health to be completed prior to work resulting in the potential release of ACMs.

.4 Work Areas:

.1 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

.1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

.2 Do not use compressed air to clean up or remove dust from any surface.

.2 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.

.3 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Perform Work in a manner to reduce dust creation to lowest levels practicable.

.4 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.

.1 Lock Out Tag Out will be conducted in accordance with applicable regulations. All affected persons will be notified, including any facility staff, users or contractors present.

.5 Clean proposed work areas using, where practicable, HEPA Vacuum cleaning equipment. 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 equipment.

.6 The spread of dust from the work area to be prevented by:

.1 Using enclosures of Polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one

or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls.

.2 Using curtains of Polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.

.7 Where work is enclosed, put Negative Pressure system in operation and operate continuously from time first Polyethylene is installed to seal openings until final completion of work including final cleanup. The system to maintain a negative air pressure, relative to the area outside the enclosed area. Air is to be exhausted directly outdoors. The system to be inspected and maintained by a Competent Worker prior each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it to be replaced before the ventilation system is used.

.1 Negative air units are to be dioctyl phthalate (DOP) tested on-site, prior to installation/use, with test results provided to Contract Administrator for review.

.8 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with Polyethylene sheeting sealed with tape.

.9 Cover floor and wall surfaces with Polyethylene sheeting sealed with tape. Cover floors first so that Polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.

.10 Build Airlocks at entrances to and exits from work areas so that work areas are always closed off by one Curtained Doorway when workers enter or exit.

.11 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Fire Commissioner of Canada and Provincial Fire Marshall Authority having jurisdiction.

.12 Where application of water is required for wetting asbestos containing materials, shut off electrical power, 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.

.5 At each 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 ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".

.6 Do not begin Asbestos Abatement work until:

.1 Arrangements have been made for disposal of waste.

.2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.

.3 Work area[s] and decontamination enclosures are effectively segregated.

.4 Tools, equipment, and materials waste containers are on hand.

.5 Arrangements have been made for building security.

.6 Warning signs are displayed where access to contaminated areas is possible.

.7 Notifications have been completed and other preparatory steps have been taken.

**3.02 SUPERVISION**

.1 Minimum of one Supervisor for every ten workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of ACMs.

**3.03 PROCEDURES**

.1 Before removing asbestos:

.1 Prepare site.

.2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Remove saturated asbestos material in small amounts. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick 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 area, and store in a holding area pending removal to Unloading Room and outside. Ensure that containers are removed from holding area by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of removal work, wire brush, HEPA Vacuum and/or wet-sponge surfaces from which asbestos has been removed to remove visible material.

.5 Where Contract Administrator decides complete removal of ACM is impossible due to obstructions such as structural members or major service elements, and provides written direction, encapsulate material as follows:

.1 Apply penetrating type sealer to penetrate existing sprayed asbestos surfaces uniformly to substrate.

.6 After removal of visible asbestos, and after encapsulating ACM impossible to remove, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA Vacuum followed by wet cleaning. After inspection by Contract Administrator apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of Negative Pressure units during this period.

.7 Pipe Insulation Removal Using Glove Bag:

.1 A glove bag not to be used to remove insulation from a pipe, duct or similar structure if:

.1 It may not be possible to maintain a proper seal for any reason including, without limitation:

.1 The condition of the insulation.

.2 The temperature of the pipe, duct or similar structure.

.2 The bag could become damaged for any reason including, without limitation.

.1 The type of jacketing.

.2 The temperature of the pipe, duct or similar structure.

.2 Upon installation of the glove bag, inspect bag for any damage or defects. If any damage or defects are found, the glove bag is to be repaired or replaced. The glove bag to be inspected at regular intervals for damage and defects, and repair or replaced, as appropriately. The asbestos containing contents of the damaged

or defective glove bag found during removal are to be wetted and the glove bag and its contents are to be removed and disposed of in an appropriate waste disposal container. Any damaged or defective glove bags are not be reused.

.3 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.

.4 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.

.5 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.

.6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.

.7 After removal of bag ensure that pipe is free of residue. Remove residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow drying sealer to seal in any residual fibres.

.8 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.

.8 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.9 Cleanup:

.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA Vacuum or by damp mopping.

.2 Place dust and asbestos-containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA Vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA Vacuum.

**3.04 FINAL CLEANUP**

.1 Remove Polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos-containing particles observed during cleanup, immediately, using HEPA Vacuum equipment.

.2 Place Polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

.3 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.

.4 Include in 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.

.5 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

**3.05 AIR MONITORING**

.1 From beginning of Work until completion of cleaning operations, The Contractor shall retain an independent, competent (as described in the SAFE Work Manitoba 2020 “Guide for Asbestos Management”) third party (further referred to herein as the “Hazmat Consultant”) to take air samples inside and outside of Asbestos Work Area in accordance with the recommendations set forth in the SAFE Work Manitoba 2020 “Guide for Asbestos Management”.

.1 Air monitoring will be paid by cash allowance, refer to Section 01 21 00 – Allowances.

.2 Air sample analysis will be conducted by Phase Contrast Microscopy (PCM) using the NIOSH 7400 method: Asbestos and Other Fibers by PCM for airborne asbestos exposure analysis as per regulatory guidelines.

.3 Air sample results will be provided to the Contractor and the Contract Administrator within 24-hours of sample collection.

.4 Analysis will be conducted by qualified persons or laboratories that take part in a documented QA/QC program for such analysis.

.2 Contractor will be notified to Stop Work when airborne fibre measurements exceed 0.05 fibres per cubic centimetre, when PPE and protection factors are considered, and to correct procedures.

.1 Additional monitoring will be conducted, where possible, to verify procedural corrections were effective.

.3 If air monitoring shows that areas outside Asbestos Work Area are contaminated as determined by the Contract Administrator, Contractor will be notified to maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract.

.4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown and correction of deficiencies.

.5 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.6 Post-abatement testing must be completed.

.1 After Asbestos Work Area has passed visual inspection by Contractor and/or Contract Administrator and acceptable coat of lock-down agent has been applied to surfaces within enclosure by the Contractor, and appropriate setting period has passed, post-abatement air monitoring within Asbestos Work Area must be conducted.

.1 Final air monitoring results must show fibre levels of less than 0.01 fibres per cubic centimetre.

.2 If air monitoring results show fibre levels in excess of 0.01 fibres per cubic centimetre, Contractor will re-clean work area and apply another acceptable coat of lock-down agent to surfaces, at no additional cost to Contract.

.3 Repeat as necessary until fibre levels are less than 0.01 fibres per cubic centimetre, at no additional cost to Contract.

.7 Contractor will be provided with authorization to remove enclosure structures upon receipt of acceptable air sample results.

**3.06 INSPECTION**

.1 Perform random inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation[s] from these requirements that have not been approved in writing by Contract Administrator may result in Work stoppage, at no cost to Owner.

.2 Contract Administrator may inspect Work for:

.1 Daily 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 asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

**END OF SECTION**