ASBESTOS REMOVAL SPECIFICATION

1615 Dufferin Street
Toronto, ON

Section(s):

Section 02 13 81 – Type 1 Asbestos Removal
Section 02 13 82 – Type 2 Asbestos Removal
Section 02 13 83 – Type 3 Asbestos Removal
Section 02 13 84 – Type 2 Glove Bag Asbestos Removal

Prepared for:

Inder Bhamra (he/him/his), EP, PMP, CSM
Environmental Coordinator - Project Management Office

City of Toronto
Corporate Real Estate Management
55 John Street, 2nd Floor
Toronto, ON
M5V 3C6

January 2025

1 PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

1.2 Conform to Sections of Division 1 as applicable.

1.3 Section 02 13 81, Type 1 Asbestos Removal defines procedures and requirements only for handling non-friable asbestos. Performance of such work is responsibility of each Section required to handle, cut, drill, or remove non-friable asbestos as necessary to perform work of their respective Sections. Such work shall be done in strict accordance with handling requirements specified in Section 02 13 81, Type 1 Asbestos Removal.

1.2 RELATED WORK

1.2.1 Section 02 13 82 – Type 2 Asbestos Removal

1.2.2 Section 02 13 83 – Type 3 Asbestos Removal

1.2.3 Section 02 13 84 – Type 2 Asbestos Glove Bag Removal

1.3 DESCRIPTION OF WORK

1.3.1 Types of asbestos present: Chrysotile present in non-friable asbestos containing materials.

1.3.2 Remove and dispose of as required, all non-friable asbestos containing products, such as, but not limited to, vinyl asbestos floor tile (VFT), mastic on floor or caulking, etc.

1.3.3 Non-Friable asbestos containing materials identified can be found within the Safetech Environmental Ltd. report titled "*Designated Substances and Hazardous Building Materials Assessment Report, Demolition Project, 1615 Dufferin Street, Toronto, Ontario"* issued January 13, 2025. A copy of this report can be found within the contract documents.

1.3.4 Non-friable asbestos handling shall be performed by firms and workers fully experienced in asbestos control.

1.3.5 Handle non-friable asbestos materials required to be removed as specified herein.

1.3.6 Seal asbestos waste receptors promptly when filled.

1.3.7 Obtain and submit copy of necessary permits for transporting and disposal of asbestos waste.

1.3.8 Protect surfaces in asbestos work area(s) and prevent spread of asbestos dust, by use of drop sheets of polyethylene sheeting or other acceptable material.

1.3.9 During, and at completion of work, clean asbestos work area(s) as specified.

1.3.10 All work will be subject to review and air monitoring both inside and outside asbestos work area(s) by Owner's Consultant. Clean-up contamination of surrounding areas, indicated by visual inspection or air monitoring, caused by this work.

1.4 **DEFINITIONS**

1.4.1 **HEPA Filter:** High Efficiency Particulate Aerosol filter at least 99.97 percent efficient in collecting 0.3 micrometer aerosol.

1.4.2 **Non-Friable Material:** Material that when dry cannot be crumbled, pulverized or powdered by hand pressure. Includes, but not limited to, following asbestos containing products: vinyl asbestos floor tiles, resilient sheet flooring, acoustic ceiling and wall tiles, gaskets, seals, packings, friction products, drywall joint compounds and asbestos cement panels, shingles and piping.

1.4.3 **Polyethylene Sheeting:** Polyethylene sheeting of 0.15 mm (6 mil) minimum thickness with tape seals along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous membrane protection.

1.4.4 **Authorized Visitor(s):** Owner's Consultant or person(s) representing regulatory agencies, and person(s) authorized by them.

1.4.5 **Asbestos Work Area(s):** Area(s) where work takes place which will, or may, disturb asbestos-containing material.

1.5 **REGULATIONS**

1.5.1 Comply with Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations made under Occupational Health and Safety Act, Reg. 278/05, as amended, and local requirements pertaining to asbestos; provided that in case of conflict with these Specifications most stringent requirements shall apply.

1.5.2 Handle and dispose of contaminated waste as required by Ontario Regulation 347 as amended to 217/08, made under The Environmental Protection Act.

1.6 **WORKER PROTECTION**

1.6.1 Respirators are not mandatory for work with non-friable asbestos-containing materials, however, for this project, provide non-powered air half face respirator with minimum P00 filter cartridges in accordance with NIOSH Part 84 requirements. Provide proper instruction to workers in use of respirators including qualitative fit testing. Replace filters as necessary, according to manufacturer's instructions. Workers shall not wear facial hair that affects seal between respirator and face. Contractor to post on job bulletin Owner instructions, procedures and information pertaining to abatement work.

1.6.2 Provide, and insist on using, facilities for washing of hands and face by every worker when leaving asbestos work area. Prohibit smoking, eating and drinking in asbestos work area.

2 **PART 2 - PRODUCTS**

2.1 **MATERIALS**

2.1.1 **Asbestos Waste Receptors:** 2 separate containers of which 1 shall consist of 0.15 mm (6

mil) minimum thickness sealable polyethylene bag. Other container may be 0.15 mm (6 mil) minimum thickness polyethylene bag or rigid sealable container such as cardboard or metal or fibre drum or wood box. Other container shall be adequate to prevent perforating rips or tears in first container during filling, transport or disposal. Containers must be acceptable to disposal site selected and Ministry of Environment. Containers shall be labelled in accordance with Ministry of Environment regulations.

2.1.2 **HEPA Vacuum:** Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge.

2.1.3 **Sprayer:** Garden-type portable manual sprayer, low velocity, capable of producing mist or fine spray.

2.1.4 **Polyethylene Sheeting:** 0.15 mm (6mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

2.1.5 **Tape:** Tape suitable for sealing polyethylene to surface encountered under wet conditions using amended water and under dry conditions.

2.1.6 **Amended Water:** Water with non-ionic water wetting agent added.

3 PART 3 - EXECUTION

3.1 PREPARATION

3.1.1 Before disturbing non-friable asbestos materials except those used as flooring, cover floor and furnishings below work with polyethylene sheeting.

3.1.2 Wherever dust on surface within asbestos work area is likely to be disturbed, remove beforehand with HEPA vacuum or damp cloth.

3.2 REMOVAL OF VINYL ASBESTOS TILE

3.2.1 Start removal by wedging heavy-duty scraper in seam of 2 adjoining tiles and gradually forcing edge of 1 tile up and away from floor. Do not break off pieces of tile, but continue to force balance of tile up.

3.2.2 When first tile is removed, place it, without breaking into smaller pieces, into asbestos waste receptor.

3.2.3 Continue removal of tiles using hand tools and removing tiles intact wherever possible. When adhesive is spread heavily or is quite hard, it may prove easier to force scraper through tightly adhered areas by striking scraper handle with hammer using blows of moderate force while maintaining scraper at 25^{o} to 30^{o} angle to floor. When even this technique cannot loosen tile, removal can be simplified by heating tile with hot air gun or infrared heaters until heat penetrates through tile and softens adhesive. Do not use powered electric scrapers.

3.2.4 After removal of small area scrape up adhesive remaining on floor with hand scraper until only thin smooth film remains. Where deposits are heavy or difficult to scrape, hot air gun or infrared heaters may be used. Deposit scrapings into asbestos waste receptors. Do not dry

scrape surface of adhering pieces of tile.

3.2.5 On completion of area, clean floor with HEPA vacuum.

3.3 **REMOVAL OF ASBESTOS-CONTAINING MASTIC**

3.3.1 Apply mastic removal agent to asbestos-containing mastic with sprayer. Allow mastic removal agent to dwell according to the manufacturers specifications.

3.3.2 After appropriate dwelling time, using a hand scraper, remove asbestos-containing mastic (an absorbant material may be used to aid in controlling the spread of the liquefied mastic).

3.3.3 Using a shovel (or equivalent tool), transfer removed mastic from floor surfaces to asbestos waste receptor.

3.3.4 Should areas of mastic still remain, repeat paragraphs 3.2.1, 3.2.2 and 3.2.3 until all floor mastic has been removed.

3.3.5 On completion of removal, mop the floor with a detergent solution followed by HEPA vacuuming.

3.4 **REMOVAL OF ASBESTOS CAULKING**

3.4.1 Where possible wet material to be disturbed.

3.4.2 As necessary, use hand powered tools (i.e. hook knife, utility knife, etc) for removing asbestos-containing caulking. Use of power tools (with or without a HEPA filtered dust collection device) is strictly prohibited as a Type 1 operation.

3.4.3 Immediately place asbestos-containing caulking in asbestos waste receptor. Clean area frequently during work with HEPA vacuum or with wet methods.

3.4.4 Once the bulk of asbestos-containing caulking had been removed, use hand-powered tools (e.g. wire brush, steel wool, etc) to remove remaining remnants affixed to fire hose cabinets.

3.4.5 At the completion of removal, HEPA vacuum or wet wipe all abated surfaces to remove any visible dust or debris that may contain asbestos.

3.4.6 Dispose of drop sheets as asbestos waste. Do not reuse.

3.4.7 Sealed asbestos waste shall be transported in a bin equipped with wheels (or equivalent) to the ground floor of the parking garage where they will then be transferred to the disposal bin located on the south side of the building (i.e. adjacent parking lot). Please refer to location of disposal bin in the attached drawing found in Appendix A.

3.5 **WASTE TRANSPORT AND DISPOSAL**

3.5.1 Conform to requirements of Ontario Regulation 347 amended to 217/08, made under The Environmental Protection Act for Waste Management, transporting and disposal of hazardous waste.

3.5.2 Check with dump operator to determine type of waste containers acceptable.

3.5.3 Ensure shipment of containers to dump is taken by waste hauler licensed to transport asbestos waste.

3.5.4 Each load requires completion of bill of lading showing type and weight of hazardous waste being transported.

3.5.5 Co-operate with Ministry of Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to Owner.

3.5.6 Ensure dump operator is fully aware of hazardous material being dumped.

3.5.7 Ensure that containers used for dumping are locked and covered at all times.

End of Section

1 PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 RELATED WORK

1.2.1 Section 02 13 81 – Type 1 Asbestos Removal

1.2.2 Section 02 13 83 – Type 3 Asbestos Removal

1.2.3 Section 02 13 84 – Type 2 Asbestos Glove Bag Removal

1.3 DESCRIPTION OF WORK

1.3.1 Friable and non-friable asbestos-containing materials (and types of asbestos present) identified can be found within the Safetech Environmental Limited report titled "*Designated Substances and Hazardous Building Materials Assessment Report, Demolition Project, 1615 Dufferin Street, Toronto, Ontario"* issued January 13, 2025.

1.3.1 Type 2 operations can be applied for removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.

1.3.2 Type 2 operations can be applied for the repair of friable materials or, removal of less than one square metre of friable asbestos containing materials. In addition, Type 2 Glove Bag operations can be applied for the removal of asbestos containing mechanical pipe insulation fittings (see Section 02 13 84).

1.3.3 Type 2 operations can be applied for enclosing friable asbestos-containing material.

1.3.4 Type 2 operations can be applied for applying tape or a sealant or other covering to pipe insulation that is asbestos-containing material.

1.3.5 Type 2 operations can be applied for disturbing or removing non-friable asbestos-containing material if the material is not wetted to control the spread of dust or fibres, and the work is done only by means of non-powered hand-held tools.

1.3.6 Type 2 operations can be applied for removing or disturbing non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust collecting devices equipped with HEPA filters.

1.3.7 Perform asbestos removal by full enclosure method.

1.3.8 Maintain electrical and mechanical services passing through asbestos work area.

1.3.9 Seal all surfaces from which asbestos has been cleaned or removed with slow drying sealer.

1.3.10 Dispose of temporary enclosures, disposable equipment and any asbestos-containing or

contaminated materials removed, as asbestos waste.

1.3.11 All work will be subject to inspection and air monitoring both inside and outside asbestos work area by Owner's Consultant. Any contamination of surrounding areas (indicated by visual inspection or air monitoring) shall necessitate complete enclosure and clean-up of affected areas.

1.4 **DEFINITIONS**

1.4.1 **HEPA Filter**: High Efficiency Particulate Aerosol filter at least 99.97 percent efficient in collecting 0.3 micrometer aerosol.

1.4.2 **Friable Material**: Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

1.4.3 **Polyethylene Sheeting:** Polyethylene sheeting 0.15 mm (6 mil) minimum thickness; with tape seals along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane protection.

1.4.4 **Authorized Visitor(s):** Construction Manager or person(s) representing regulatory agencies, and person(s) authorized by them.

1.4.5 **Asbestos Work Area(s):** Area(s) where work takes place which will, or may disturb asbestos-containing material, including overspray and fallen material, or settled dust that may contain asbestos.

1.4.6 **Curtained Doorway:** Device to allow ingress or egress from enclosure while permitting minimal air movement, typically constructed by placing 2 overlapping flaps of polyethylene sheeting (2 sheets of polyethylene per flap) attached to head and 1 jamb of existing or temporarily constructed door frame. Secure vertical edge of 1 flap along 1 vertical side of door frame, and vertical edge of other flap along opposite vertical side of door frame. Reinforce free edges of polyethylene with duct tape.

1.4.7 **Negative Pressure:** Reduced pressure within asbestos work area(s) established by extracting air directly from work area, and discharging directly to exterior of building. Discharged air first passes through HEPA filter. Extract sufficient air to ensure constant reduced pressure at perimeter of work area with respect to surrounding areas.

1.4.8 **Airlock:** 2 curtained doorways spaced minimum of 2 m (6') apart.

1.5 **QUALITY ASSURANCE**

1.5.1 Ensure work proceeds to Schedule and meets all requirements of this Section. Perform work so airborne asbestos, asbestos waste or water run off does not contaminate areas outside asbestos work enclosure.

1.5.2 Pay cost to Owner of inspection and air monitoring performed as result of failure to perform work satisfactorily.

1.5.3 Use only skilled and qualified workers for all trades required for this work.

1.6 **REGULATIONS**

1.6.1 Comply with Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations made under Occupational Health and Safety Act, Reg. 278/05, as amended, and local requirements pertaining to asbestos; provided that in case of conflict with these Specifications most stringent requirements shall apply.

1.6.2 Handle and dispose of contaminated waste as required by Ontario Regulation 347 as amended by 234/11, made under The Environmental Protection Act, as amended.

1.7 **SUBMITTALS**

1.7.1 Before Commencing Work:

1.7.1.1 Obtain and submit all necessary permits for transporting and disposal of asbestos waste.

1.7.1.2 Submit names of supervisory personnel who will be responsible for asbestos work area(s). One supervisor must remain on-site at all times while asbestos removal or clean-up is occurring. Submit proof that supervisory personnel have attended training course on asbestos control (2 day minimum duration) and have performed supervisory function on at least 2 other asbestos control projects.

1.7.1.3 Submit proposed schedule showing phasing and proposed workforce related to each work area enclosure or repair operation.

1.7.1.4 Submit list of existing damage for acceptance.

1.8 **WORKER AND VISITOR PROTECTION**

1.8.1 **Instructions**: Before entering asbestos work area(s), instruct workers and visitors in use of respirators, entry and exit from enclosures and all aspects of work procedures and protective measures. Instruction shall be provided by competent person as defined by Occupational Health and Safety Act.

1.8.2 **Full Face Respirator**: Provide appropriate respiratory equipment for all persons within asbestos work area including authorized visitors. During specified work, workers, supervisors, and authorized visitors shall wear negative pressure full-face respirators with minimum P100 filter cartridges in accordance with NIOSH Part 84 requirements (Formerly

high efficiency particulate aerosol (HEPA) cartridge filters). Replace filters daily or test according to manufacturer's specifications and replace as indicated. Respirators shall be acceptable to Occupational Health Branch of Ministry of Labour. Provide proper instruction to workers and visitors on use of respirators, including qualitative fit testing. No supervisor, worker or authorized visitor shall wear facial hair which affects seal between respirator and face. Maintain respiratory protection equipment in proper functioning and clean condition, or remove from site.

1.8.3 **Protective Clothing:** Provide workers and visitors in full-enclosure sites with full body coveralls with integral hoods. Once coveralls are worn in asbestos work area, treat and dispose of as asbestos contaminated waste. Workers and visitors shall also wear other protective apparel required by Ministry of Labour construction regulations.

1.8.4 Before entering enclosure(s) put on respirator with new or tested filters, clean coveralls and head covers. Wear coveralls with hoods up at all times.

1.8.5 Workers may leave enclosure, only after all disturbance of asbestos-containing materials is complete and enclosure has been cleaned-up. When leaving enclosure workers and visitors use HEPA vacuum to clean exterior of respirator to remove visible contamination, and remove gross contamination from coveralls and other protective equipment. Immediately upon leaving enclosure workers and visitors shall remove coveralls and wash face and hands thoroughly with soap and water; wet clean inside of respirator. Remove filters and dispose of or test filters according to manufacturer's specifications. Place coveralls and used filters in receptacles for disposal with other asbestos contaminated materials. Coveralls can be reused, to maximum of 8 hours wear, if coveralls remain inside work area.

1.8.6 Do not eat, drink, smoke or chew gum or tobacco in enclosures.

1.8.7 Workers and visitors shall be fully protected as specified herein whenever possibility of disturbance of asbestos exists.

2 PART 2 - Products

2.1 MATERIALS

2.1.1 **Polyethylene Sheeting:** 0.15 mm (6 mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

2.1.2 **Rip-Proof Polyethylene:** 0.20 mm (8 mil) fabric made up from 0.13 mm (5 mil) weave and 2 layers 0.04 mm (1.5 mil) poly laminate, in sheet size to minimize joints.

2.1.3 **Tape:** Tape suitable for sealing polyethylene to surface encountered under both wet conditions using amended water, and dry conditions.

2.1.4 **Wetting Agent:** Non-sudsing surface active agent; mixed with water in concentration to provide thorough wetting of asbestos fibre: Asbestos-Wet, distributed by Asbetec Distributors, Richmond Hill, Ontario.

2.1.5 **Amended Water:** Water with wetting agent added.

2.1.6 **Asbestos Waste Receptors:** 2 separate containers of which 1 shall consist of 0.15 mm (6 mil) minimum thickness polyethylene bag. Other container may be 0.15 mm (6 mil) minimum thickness polyethylene bag or rigid sealable container such as metal or cardboard, fibre drum or wood box. Other container shall be adequate to prevent perforating rips, or tears in first container during filling, transport or disposal. Containers must be acceptable to disposal Site selected and Ministry of Environment and Energy.

2.1.7 **Sealer:** Sealer for purpose of trapping residual fibre debris. Product must have flame spread and smoke development ratings both less than 25. Product shall leave no stain when dry: TC-55 (clear), A/D Fire Protection Systems Inc., Scarborough, Ontario. For mechanical equipment, pipes, boilers, etc. use high temperature sealer only: Chil-Abate CP210, Childers Products Company, Mississauga, Ontario.

2.1.8 **Sprayer:** Garden-type portable manual sprayer, low velocity, capable of producing mist or fine spray.

2.1.9 **HEPA Vacuum:** Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge.

3 PART 3 - Execution

3.1 FULL-ENCLOSURE ASBESTOS WORK AREAS

3.1.1 Move equipment, tools, and stored materials which can be moved without disturbing asbestos-containing materials.

3.1.2 Remove elements which can be removed without disturbing friable asbestos material.

3.1.3 If working from within building, request building personnel to shut off air handling and ventilation systems supplying or exhausting from asbestos work area enclosure(s). Ensure air-handling systems remain shut off for duration of work.

3.1.4 Erect wood or metal framing between asbestos work area and remaining building area, as necessary to support polyethylene sheeting enclosures. Free standing enclosure shall have completely sealed polyethylene top.

3.1.5 Use sufficient layers to provide adequate protection. Protect floors with at least 1 layer of polyethylene sheeting. Where walls are protected with sheeting, cover floors first so that wall polyethylene overlaps floor layer by at least 300 mm (12").

3.1.6 Where applicable clean previously contaminated surfaces with HEPA vacuum before covering with sheeting.

3.1.7 If enclosure is used for more than 1 shift, construct airlock for entry to and exit from enclosure. Clean enclosure prior to exiting at completion of each shift.

3.1.8 Establish negative pressure in asbestos work area. Operate negative pressure units or HEPA vacuums continuously from this time until completion of contaminated work.

3.1.9 Provide soap, water and towels for washing of worker's face and hands when exiting enclosure.

3.1.10 Maintain emergency and fire exits from asbestos work area, or establish alternative exits satisfactory to authorities having jurisdiction.

3.1.11 Ensure existing power supply to asbestos work area is isolated and disconnected where necessary. Do not disrupt power supply to remainder of building.

3.2 MAINTENANCE OF ENCLOSURES

3.2.1 Maintain enclosures in tidy condition.

3.2.2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

3.2.3 Visually inspect enclosures at beginning and end of each working period.

3.3 COMMENCE ASBESTOS REMOVAL OR CLEANUP WORK WHEN

3.3.1 Arrangements have been made for disposal of waste.

3.3.2 Asbestos work areas enclosures and parts of building required to remain in use are effectively segregated. Negative pressure equipment is operating continuously.

3.3.3 Tools, equipment and materials waste receptors are inside enclosure.

3.3.4 Arrangements have been made for work area security.

3.3.5 Signs are displayed in all areas where access to sealed asbestos work areas possible. Signs shall read:

CAUTION
Asbestos Hazard Area
No Unauthorized Entry
Wear assigned protective equipment
Breathing asbestos dust may cause serious bodily harm.

3.3.6 Owner’s Consultant has been notified of intention to proceed and has reviewed enclosures and equipment.

3.4 ASBESTOS DISTURBANCE IN ENCLOSURE

3.4.1 Before commencing work, prepare Site as described in articles 3.1, 3.2 and 3.3.

3.4.2 Seal opening to enclosure with tape after entry of worker. Worker shall remain inside enclosure until disturbed asbestos-containing materials are removed and enclosure has been effectively cleaned.

3.4.3 Perform work required inside enclosure. Trades personnel may enter enclosure to perform Type 2 operations under the guidance of competent worker.

3.4.4 When cleaning or removing asbestos-containing drywall walls within enclosure, spray asbestos-containing material with amended water. Saturate asbestos to prevent release of airborne fibres during removal. Place fully saturated asbestos directly into waste containers.

3.4.5 Treat materials removed including used polyethylene sheeting as asbestos contaminated waste and dispose of as such.

3.4.6 Following completion of work, clean surfaces from which asbestos has been disturbed with HEPA vacuum, or wet-sponge if appropriate to remove all visible material.

3.4.7 Carefully place asbestos waste in inner bag of asbestos waste receptor. Clean inner bag surface of gross contamination and place in clean 6 mil outer bag. If waste is likely to tear inner bag, then instead of outer bag use fibre or metal drum, cardboard or wood box, or other suitably sturdy container.

3.4.8 After wet-sponging or vacuuming to remove visible asbestos, wet clean entire enclosure. Apply coat of sealer to all surfaces from which asbestos has been disturbed. Apply thinned coat (sufficient to coat all surfaces) to interior of polyethylene enclosure prior to tear down.

3.5 TEAR DOWN OF PROTECTION

3.5.1 When dismantling enclosure, carefully roll polyethylene toward centre of enclosure. As polyethylene is rolled away, immediately remove any visible debris with HEPA vacuum.

3.5.2 Place polyethylene sheeting seals, tape, cleaning material, coveralls, and other contaminated waste in asbestos waste receptors for transport. Remove any debris fallen behind plastic with HEPA vacuum.

3.5.3 Clean up asbestos waste receptors and equipment used in work, and remove from asbestos work area(s) via drum and equipment decontamination enclosure systems, at appropriate time in sequence. Double bag waste immediately prior to transport from site to disposal bin.

3.5.4 Final review may be carried out by Owner’s Consultant to ensure no dust or debris remains.

3.6 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

3.6.1 When clean-up is complete reinstall items removed to facilitate asbestos related operation, in their proper positions. Reconstruction and reinstallation shall be by tradesmen qualified in work being reinstalled or reconstructed.

3.6.2 At completion of work make good all damage not identified in pre-removal survey referred to in para. 1.7.1.4.

3.7 AIR MONITORING

3.7.1 Owner's Consultant may arrange for air samples to be taken from commencement of work until completion of cleaning operations, both inside and outside of asbestos work area(s) enclosures in accordance with NIOSH methods.

3.7.2 If air sampling is conducted, results of phase contrast microscopy analysis of the sample(s) must be lower than the criteria of 0.01 fibers/cc.

3.8 INSPECTION

3.8.1 From commencement of work until completion of clean-up operations, Client's Consultant may be present.

3.8.2 If visual inspection indicates that areas outside current asbestos work area enclosures are contaminated, these areas are to be cleaned in same manner as that applicable to asbestos work areas, at no cost to Client.

3.8.3 Pay cost to provide re-inspection of work found not to be in accordance with these specifications and requirements of authorities having jurisdiction.

3.9 WASTE TRANSPORT AND DISPOSAL

3.9.1 Conform to requirements of Regulation 347 as amended by 234/11, made under Environmental Protection Act for Waste Management, transporting and disposal of hazardous waste.

3.9.2 Obtain Certificate of Approval from Ministry of Environment for waste management disposal system for asbestos.

3.9.3 Check with dump operator to determine type of waste containers acceptable.

3.9.4 Ensure shipment of containers to dump is taken by waste hauler licensed to transport asbestos waste.

3.9.5 Each load requires completion of bill of lading showing type and weight of hazardous waste being transported.

3.9.6 Co-operate with Ministry of Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to Owner.

3.9.7 Ensure dump operator is fully aware of hazardous material being dumped.

End of Section

1 PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 RELATED WORK

1.2.1 Section 02 13 81 – Type 1 Asbestos Removal

1.2.2 Section 02 13 82 – Type 2 Asbestos Removal

1.2.3 Section 02 13 84 – Type 2 Asbestos Glove Bag Removal Procedures

1.3 DESCRIPTION OF WORK

1.3.1 Friable and non-friable asbestos-containing materials (and types of asbestos present) identified can be found within the Safetech Environmental Limited report titled "*Designated Substances and Hazardous Building Materials Assessment Report, Demolition Project, 1615 Dufferin Street, Toronto, Ontario" issued January 13, 2025*.

1.3.2 Friable asbestos containing materials to be removed utilizing Type 3 operations. Type 2 operations can be applied for the repair of friable materials or removal of less than 1.0 square metre of friable asbestos containing materials. In addition, Type 2 Glove Bag operations can be applied for the removal of asbestos containing mechanical pipe insulation fittings.

1.3.3 Perform asbestos removal by full enclosure method.

1.3.4 Seal surfaces from which asbestos has been removed and surfaces potentially contaminated with asbestos, with sealer.

1.3.5 Maintain only emergency electrical and mechanical services passing through asbestos work areas. All other services must be deactivated during abatement work.

1.3.6 All work will be subject to inspection and air monitoring inside and outside asbestos work area by the Owner's Consultant. Any contamination of surrounding areas, indicated by visual inspection or air monitoring, shall necessitate complete cleanup of affected areas at no additional cost to the Owner.

1.3.7 Protect surfaces remaining within asbestos work area.

1.3.8 All upper seals to be constructed with fire-rated rip-proof polyethylene sheeting, adhered to building components with construction grade adhesive, mechanically fastened to concrete deck (anchors every metre) and labelled with asbestos cautionary stickers (every metre).

1.4 DEFINITIONS

1.4.1 **HEPA Filter**: High Efficiency Particulate Aerosol filter at least 99.97 percent efficient in collecting 0.3-micrometer aerosol.

1.4.2 **Friable Material**: Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled pulverized or powdered.

1.4.3 **Polyethylene Sheeting:** Polyethylene sheeting of 0.15 mm (6 mil) minimum thickness with tape seals along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous membrane protection.

1.4.4 **Asbestos Work Area(s)**: Area(s) where work takes place which will, or may, disturb asbestos-containing material, including overspray and fallen material, or settled dust that may contain asbestos.

1.4.5 **Curtained Doorway:** Device to allow ingress or egress from one room to another while permitting minimal air movement between rooms, typically constructed by placing 2 overlapping sheets of polyethylene sheeting (2 sheets of polyethylene sheeting per flap) attached to head and one jamb of existing or temporarily constructed door frame. Secure vertical edge of 1 flap along 1 vertical side of doorframe and vertical edge of other flap along opposite vertical side of doorframe. Reinforce free edges of polyethylene sheeting with duct tape.

1.4.6 **Negative Pressure**: Reduced pressure within asbestos work area(s) established by extracting air directly from work area, and discharging it directly to exterior of building. Discharged air first passes through HEPA filter. Extract sufficient air to ensure constant reduced pressure at perimeter of work area with respect to surrounding areas.

1.4.7 **DOP Test:** A testing method employing dioctyl phthalate aerosol for purpose of leak testing negative air units. Provide documentation that negative air units have been DOP tested within the last thirty days.

1.5 **REGULATIONS**

1.5.1 Comply with Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations made under The Occupational Health and Safety Act, Ontario Regulation 278/05 and local requirements pertaining to asbestos, provided that in case of conflict with these Specifications. Most stringent requirements shall apply.

1.5.2 Handle and dispose of contaminated waste as required under Ontario Regulation 347/90 as amended, General Waste Management made under The Environmental Protection Act.

1.5.3 Not later than ten days before commencing asbestos work on this project, notify in writing Ontario Ministry of Labour, Construction Health and Safety Branch located nearest to the area the abatement is being conducted. The information provided to the Ontario Ministry of Labour must comply with the requirements outlined in Section 11, subsection 3 of Ontario Regulation 278/05. Orally notify them before commencing work.

1.5.4 Notify sanitary landfill site in accordance with requirements of Ontario Regulation 347/90, as amended, General Waste Management.

1.5.5 Contractor shall ensure that:

1.5.5.1 Measures and procedures prescribed under the Occupational Health & Safety Act and regulations are carried out.

1.5.5.2 Every employee and every worker on project complies with applicable act and regulations.

1.5.5.3 Health & safety of workers and public is protected.

1.5.5.4 All material handling, and associated equipment conform to and are operated in accordance with "Workplace Hazardous Materials Information System" (WHMIS).

1.5.5.5 Advise the Owner whenever work is expected to be hazardous to employees and/or public.

1.5.6 Contractor may be requested to provide information on their health & safety record.

1.6 **QUALITY ASSURANCE**

1.6.1 Ensure work proceeds to schedule, and meets all requirements of this Section. Perform work so that airborne asbestos, asbestos waste, or water runoff do not contaminate areas outside asbestos work enclosure.

1.6.2 Pay cost to the Owner of inspection and air monitoring performed as result of failure to perform work satisfactorily regarding quality, safety, or schedule.

1.6.3 Use only skilled and qualified workers for all trades required for this work.

1.7 **SUBMITTALS**

1.7.1 Before commencing work

1.7.2 Obtain and submit all necessary permits for transporting and disposal of asbestos waste.

1.7.3 Notice of Project and/or Notice to Inspector issued by the Ontario Ministry of Labour for the planned work.

1.7.4 Submit names of supervisory personnel who will be responsible for asbestos work area(s). One of these supervisors must remain on Site at all times asbestos removal or clean-up is occurring. Submit proof that supervisory personnel have attended training course on asbestos control (2 day minimum duration) and have performed supervisory function on at least 2 other asbestos removal projects.

1.7.5 Submit proof that all workers conducting abatement activities have successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry

of Training, Colleges and Universities and supervisors conducting abatement activities have successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities as outlined in Section 20 of Ontario Regulation 278/05.

1.7.6 Submit list of existing damage for acceptance.

1.7.7 Laws of province of Ontario shall govern this work. Contractor shall observe all such laws and shall obtain and/or pay all permits, notices, fees, taxes, duties as may be required. Likewise, it is responsibility of the contractor to comply with Workers Safety and Insurance Board and Occupational Health and Safety Act.

1.7.8 Before commencing any work, Contractor shall submit, in writing, confirmation of good standing with Workplace Safety and Insurance Owner (WSIB).

1.8 WORKER AND VISITOR PROTECTION

1.8.1 **Instructions:** Before entering asbestos work area, instruct workers and visitors in use of respirators, dress, showers, entry and exit from asbestos work areas, and all aspects of work procedures and protective measures. Instruction shall be provided by Competent Person as defined by Occupational Health and Safety Act.

1.8.2 **Full Face Respirator:** During wet removal and cleanup in enclosed asbestos work area workers, supervisors, and authorized visitors shall be supplied with and use air-purifying full-face respirator (APR) with P100 cartridge filters. Replace filters daily or test according to manufacturer's specifications and replace as indicated. Respirators shall be acceptable to Occupational Health Branch of Ministry of Labour. Provide proper instruction to workers and visitors in use of respirators, including qualitative fit testing. Maintain respiratory protection equipment in proper functioning and clean condition.

1.8.3 **Protective Clothing**: Provide workers and visitors in full-enclosure sites with full body coveralls with integral hoods. Once coveralls are worn in asbestos work area, dispose of as contaminated waste. Workers and visitors shall wear other protective apparel required by Ministry of Labour regulations.

1.8.4 Before entering full-enclosure asbestos work area(s) remove street clothes in clean change room and put on respirator with new or tested filters, clean coveralls and head covers before entering equipment and access areas or asbestos work area. Store street clothes, uncontaminated footwear, towels etc. in clean change room.

1.8.5 Persons leaving full-enclosure asbestos work area(s) shall remove gross contamination from clothing before leaving asbestos work area. Proceed to equipment and access area and remove all clothing except respirator. Place contaminated work suit in receptacles for disposal with other asbestos contaminated materials. Footwear, clothing, hardhats, protective eyewear, etc., shall be left in equipment and access area to dry for later use. While still wearing respirator, proceed naked to showers. Clean respirator to ensure that visible contamination is removed. After having thoroughly washed hair and body with shampoo and soap, remove respirator. Remove filters and dispose of in container provided for this purpose or test filters according to manufacturer's recommendation. Dispose of filters as necessary. Wet clean inside of

respirator. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean before removing from equipment and access area, or carry in sealed plastic bag to next site.

1.8.6 Following showering, proceed to clean change room, dry off and dress in street clothes. Store respirators in fashion to allow them to be put on prior to entering asbestos work area at start of next shift without contaminating clean area. If re-entry to asbestos work area is to take place after having left for eating or drinking, follow procedures in para. 1.8.5.

1.8.7 Removal of waste and equipment from holding room of waste decontamination enclosure system shall be performed by workers entering from outside. These workers shall wear clean coveralls and half-face, asbestos approved, respirator as specified in para 1.8.2 and 1.8.3. No worker shall use this system as means to leave or enter asbestos work area.

1.8.8 Do not eat, drink smoke or chew gum or tobacco at work site. Tobacco products are not allowed on property.

1.8.9 Workers and visitors shall be fully protected as specified herein when possibility of disturbance of asbestos exists.

2 PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 **Polyethylene**: 0.15 mm (6 mil) minimum thickness unless otherwise specified.

2.1.2 **Rip-Proof Polyethylene**: 0.20 mm (8 mil) fabric made up from 0.13 mm (5 mil weave and 2 layers 0.04 mm (1.5 mil).

2.1.3 **Tape**: Tape suitable for sealing polyethylene to surface encountered, under both wet conditions using amended water, and dry conditions.

2.1.4 **Wetting Agent**: Non-foaming surface active agent; mixed with water in concentration to provide thorough wetting of asbestos fibre: Standard of Acceptance, Asbesto-Wet, distributed by Asbetec Distributors, or equivalent.

2.1.5 **Amended Water**: Water with wetting agent added.

2.1.6 **Asbestos Waste Receptors**: Two separate containers of which 1 shall consist of 0.15 mm **(true 6 mil)** minimum thickness sealable polyethylene bag. Other container may be 0.15 mm **(true 6 mil)** minimum thickness polyethylene bag. Outer container shall be adequate to prevent perforating rips, or tears during filling, transport or disposal. Containers must be acceptable to disposal site selected, and the Ministry of Environment, and shall be clearly marked to indicate that contents contain asbestos.

2.1.7 **Sealer**: Sealer for purpose of trapping residual fibre debris. Product must have flame spread and smoke development ratings both less than 25. Product shall leave no stain when dry: Standard of acceptance - TC-55 (clear), A/D Fire Protection Systems Inc.,

Scarborough, Ontario, or equivalent. For mechanical equipment, piping and boilers, etc. use high temperature sealer only: Standard of acceptance - Chil-Abate CP210, Childers Products Company, or equivalent.

2.1.8 **Ground Fault Panel**: Portable electrical panel equipped with ground fault circuit interrupters (5 mA protection) of sufficient capacity to power all electrical equipment and lights in asbestos work enclosure. Panel complete with ground fault interrupter lights, test switch to ensure unit is working, and reset switch

2.1.9 **HEPA Vacuum:** Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge.

2.1.10 **Protective Coveralls**: Disposable full body coveralls complete with elasticized hoods made of spun polyolefin material Tyvek by Dupont or nonwoven material Kleenguard by Kimberley Clark.

2.1.11 **Flexible ducting**: Metal reinforced flexible ductwork, 12" diameter minimum.

2.1.12 **Negative Air Unit**: Portable air handling system, which extracts air directly from asbestos work area and discharges air outside building. Unit shall be fitted with prefilter and HEPA final filter. Air shall pass HEPA filter before discharge. Unit shall have pressure differential gauge to monitor filter loading. Unit shall have auto shut-off and warning system for HEPA filter failure. HEPA filter shall have separate hold down clamps to retain filter in place.

2.1.13 **Power Sprayer**: Standard of acceptance - Graco Maxi-wetter, or equivalent.

2.1.14 **Encapsulant**: Standard of acceptance - Ocean No. 666, Ocean Fire Retardants Inc., or equivalent, coloured bright red.

PART 3 - EXECUTION

3 PREPARATION

3.1 Full-enclosure Asbestos Work Area(s).

3.1.1 The Owner will move equipment, tools, furnishings, and stored materials that can be moved without disturbing asbestos-containing materials.

3.1.2 Request building personnel to deactivate air handling and ventilation systems supplying or exhausting from asbestos work area(s).

3.1.3 All wall and horizontal surfaces shall be pre-cleaned using damp cloth or sponge techniques prior to placement of polyethylene sheeting to any wall or floor surfaces. H.E.P.A. equipped vacuum cleaners may also be used to perform this task.

3.1.4 If necessary, caulk and seal ducts and duct shafts to remain in service as required, to make airtight. Cut and cap supply ducts with rigid sheet metal caps and seal. Perform work at appropriate time under contaminated conditions if necessary.

3.1.5 Seal off openings such as doorways, windows, vents, service holes in walls and grilles to non-operating ducts with polyethylene sheeting with tape or with polyurethane foam as appropriate.

3.1.6 Cover wall and floor surfaces with polyethylene sheeting sealed with tape. Provide two separately sealed layers of reinforced polyethylene sheeting. Separately seal floor drains or openings. Use sufficient layers (2) and necessary sheathing for walking surface to protect floors which may be damaged. Cover floors first so that polyethylene extends at least 300 mm (12") up walls then cover walls to overlap floor sheeting. Provide additional protection for floors likely to be damaged by amended water, by covering floor with rip-proof polyethylene sheeting sealed with tape.

3.1.7 Cover with polyethylene sheeting, motors, heating units, fire apparatus, door closers, benches, shelving, storage racks, valves, taps, controllers, lights, and other fixtures and furnishings which are not being removed from asbestos work area and which could be damaged and/or which cannot be readily cleaned at completion of this work. Pre-clean surfaces potentially contaminated with asbestos, with HEPA vacuum or damp cloth prior to installing protection.

3.1.8 Install plywood enclosures, covered with rip-proof polyethylene sheeting to protect equipment or fixtures in asbestos work area(s) that may be damaged.

3.1.9 Establish negative pressure in asbestos work area as described in Para. 1.4.7. Negative pressure units shall have total rated capacity with filters in place sufficient to provide minimum 1 air change every 20 minutes in wet removal sites. Volume of air shall be sufficient to ensure airflow is maintained from clean areas into asbestos work area. Vent units to outside of building by removing, and later replacing, windows, and/or providing flexible ducting. Locate vents to discharge air away from building access points or sidewalks. Do not discharge air into building interior without obtaining approval from The Owner’s Consultant. Leak test negative air units prior to commencement of abatement at operating position, using DOP method. Provide reports for unit efficiency test results within 48 hours of testing, including calibration certificates for testing equipment. Venting of exhaust air through occupied area shall be in rigid airtight ductwork. Operate negative pressure units continuously from this time until completion of final air monitoring. Replace pre-filters as necessary to maintain airflow. Maintain negative air pressure of 5 Pascal (0.02 inches water column) pressure reduction within asbestos enclosure with respect to surrounding areas.

3.1.10 Maintain emergency and fire exits from asbestos work area, or establish alternative exits satisfactory to authorities having jurisdiction.

3.1.11 Ensure existing power supply to asbestos work area is isolated and disconnected where necessary. Do not disrupt power supply to remaining areas of building. Provide ground fault electrical system where application of amended water is required for wetting asbestos containing materials. Supply all electrical apparatus from this ground fault system. Ensure safe installation of electrical lines and equipment.

3.1.12 Provide temporary lighting in asbestos work area to levels that will permit work to be done safely and well.

3.1.13 Provide fire extinguisher at each emergency exit, and in decontamination facilities. Protect extinguishers with polyethylene sheeting in manner that will not hamper emergency use.

3.2 WORKERS' DECONTAMINATION ENCLOSURE SYSTEM

3.2.1 Construct workers' decontamination enclosure at entrance to each asbestos work area. Worker decontamination enclosure system shall comprise three interconnecting rooms as follows:

3.2.2 Provide a set of curtain doorways between each room, and at both dirty and clean entrances to enclosure systems.

3.2.3 **Equipment and Access Room**: Build room between shower room and asbestos work area. Install waste receptor, and storage facilities for worker's shoes and any protective clothing to be reworn in asbestos work areas. Equipment and access room shall be large enough to accommodate specified facilities, and other equipment needed, and at least one worker allowing sufficient space to undress comfortably. Minimum size 3 square metres (30 sq. ft.).

3.2.4 **Shower Room**: Build room between clean room and equipment and access room. Provide constant separate supplies of hot and cold water. Provide valves controllable at shower(s) to regulate water temperature. Provide rigid piping with watertight connections and connect to water sources and drains. Provide soap, clean towels and appropriate containers for disposal of used respirator filters. Direct wastewater to sanitary sewer drains via water filtering system consisting of a minimum 2-stage filtering system (25-micron and 5-micron filters).

3.2.5 **Clean Room**: Build room between shower room and clean areas outside of enclosures. At doorway to clean room, provide vented wood door, with locking passage set. Provide hangers for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install water heater, if required.

3.3 WASTE AND EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

3.3.1 Construct system comprised of three linked rooms: Purpose of this system is to provide means to decontaminate drums, scaffolding, material containers, vacuum and spray equipment; and other tools and equipment for which worker decontamination system is not suitable. Provide curtain doorways between rooms, and at both dirty and clean entrances to Enclosure System.

3.3.2 **Staging Area:** Build staging area in asbestos work area for gross removal of dust and debris from waste containers and equipment, labeling and sealing of waste containers, and temporary storage pending removal to container cleaning room.

3.3.3 **Container Cleaning Room**: Build container cleaning room between staging area and holding room. Room shall be of sufficient size to allow proper washing of equipment and drums or double bagging of asbestos waste. Treat wash water as asbestos contaminated waste.

3.3.4 **Holding Room**: Build holding room between container cleaning room and uncontaminated area. Holding room shall be of sufficient size to accommodate largest item of equipment used and ten waste containers.

3.4 **CONSTRUCTION OF DECONTAMINATION ENCLOSURES**

3.4.1 **Floor**: Prior to erecting wall framing, lay 1 sheet of rip-proof polyethylene sheeting over floor area to be covered by enclosures. Turn 600 mm (24") of rip-proof polyethylene sheeting up outside of enclosure, overlapping with polyethylene sheeting covering perimeter walls. Provide second layer of rip-proof polyethylene sheeting to all floors, extending 600 mm up inside of enclosure walls.

3.4.2 **Walls**: Build load-bearing walls of 39 mm x 89 mm (2" x 4") wood framing, 400 mm (16") o.c. with continuous top and sill plates. Cover both sides walls with polyethylene sheeting. Walls exposed to asbestos work area shall be covered with min. 9 mm (3/8") plywood sheeting or hardboard. Caulk seal and tape plywood joints. Walls exposed to occupied area shall be covered with good one side 9 mm plywood.

3.4.3 **Roof:** Size of joists shall be determined by span, loads, use and Code. Use as a minimum 39 mm x 138 mm (2" x 6") joists. Cover joists with 19 mm (3/4") plywood sheeting. Seal and tape joints, and cover with two layers of rip-proof polyethylene sheeting. At underside of joists install one layer of polyethylene sheeting.

3.4.4 **Doorways**: Build curtain doorways designed so that when workers or drums and equipment move through doorway, one of two barriers comprising doorway always remains closed.

3.5 **MAINTENANCE OF ENCLOSURES**

3.5.1 Maintain enclosures in tidy condition.

3.5.2 Ensure barriers and polyethylene sheeting linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.

3.5.3 Visually inspect enclosures at beginning and end of each working period and on days when there are no shifts.

3.6 **DO NOT COMMENCE ASBESTOS REMOVAL WORK UNTIL**

3.6.1 Arrangements have been made for disposal of waste.

3.6.2 Asbestos work areas and decontamination enclosures are effectively segregated. Negative pressure equipment is operating continuously.

3.6.3 Tools, equipment and waste materials receptors are on hand.

3.6.4 Arrangements have been made with The Owner’s Consultant for work area security.

3.6.5 Signs are displayed in areas where access to sealed asbestos work area is possible. Signs shall read:

CAUTION
Asbestos Hazard Area
No Unauthorized Entry
Wear assigned protective equipment
Breathing asbestos dust may cause serious bodily harm.

3.6.6 Proof of notification to Ministry of Labour has been submitted.

3.6.7 The Owner's Consultant has been notified of intention to proceed and has reviewed enclosures, equipment and procedures.

3.7 CONTAMINATED PREPARATION FOR FULL-ENCLOSURE ASBESTOS WORK AREA

3.7.1 Before performing any contaminated work, prepare site as described in articles 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6. Perform work of 3.7.2 and 3.7.3 with air handling system disabled and during quiet hours.

3.7.2 Using full protective procedures including amended water and HEPA vacuum, install upper seals as necessary to allow polyethylene sheeting to be fastened to structure. Each of two sheets forming wall of enclosure shall be fastened separately to deck using tape, spray adhesive, rapid setting foam or other suitable method. Provide suitable framing to support polyethylene sheeting. Seal holes in existing perimeter walls, columns, deck etc., to ensure an airtight asbestos work area.

3.7.3 Promptly seal holes or penetrations in structure above ceiling, ducts, etc. to provide airtight enclosure around asbestos work area(s).

3.7.4 Protect electrical, communication, life safety and control systems to remain in place in asbestos work area with polyethylene sheeting.

3.7.5 Seal joints and holes in uninsulated HVAC ductwork to remain operational through an asbestos work area, using tape and rip-proof polyethylene sheeting.

3.8 **REMOVAL**

3.8.1 In areas of wet removal of spray or trowel applied material, spray asbestos with amended water using airless spray equipment. Saturate asbestos to prevent release of airborne fibres during removal. Fully saturated asbestos may be scraped directly into waste containers or may be allowed to fall to floor.

3.8.2 Remove asbestos-containing mechanical insulation in layers, while maintaining all exposed surfaces of insulation or lagging in wet condition. Full saturation of insulation will not be required if material is immediately bagged and not allowed to fall to floor.

3.8.3 Following bulk removal of above noted asbestos containing materials, demolish section(s) of mechanical systems as required to access asbestos-containing material. Bag all waste and dispose of as asbestos waste.

3.8.4 Seal ends of pipe insulation at perimeters of asbestos work area with heavy coat of high temperature sealer.

3.8.5 Place asbestos waste into asbestos waste receptors. Double polyethylene bags are to be used, inner bag shall be cleaned of gross contamination and placed in a clean **6 mil** outer polyethylene bag in container cleaning room immediately prior to transfer from Site.

3.8.6 Treat all materials removed to expose asbestos, as asbestos-contaminated waste unless such materials are specified to be re-used.

3.9 **CLEAN-UP**

3.9.1 Clean surfaces from which asbestos has been removed with brushes and vacuum or wet-sponge to remove visible dust and debris.

3.9.2 Remove sealed and labeled asbestos waste receptors and dispose of in authorized disposal area in accordance with requirements of disposal authority.

3.9.3 After brushing and wet-sponging to remove visible asbestos, wet clean entire asbestos work area including equipment and access area, polyethylene sheeting and equipment used in process. Floor and wall surfaces, ducts, and similar items not covered with polyethylene sheeting must be wet cleaned.

3.9.4 Request visual inspection and acceptance. Following inspection and acceptance, apply heavy coat of slow drying sealer to all surfaces from which asbestos has been removed. Apply thinned coat (sufficient to coat all surfaces) to other surfaces in asbestos work area including all polyethylene sheeting and surfaces scheduled for demolition. Allow minimum of 12 hours flushing time with no disturbance of asbestos work area. Operate negative air units during this period.

3.10 DISMANTLING OF PROTECTION

3.10.1 If air sampling by The Owner's Consultant shows that levels in asbestos work area do not exceed 0.01 fibres/cc. as determined by NIOSH 7400 Method, A counting rules, proceed with final dismantling of enclosure.

3.10.2 Remove polyethylene sheeting exposed during contaminated work including upper surfaces plus any underlying sheeting contaminated by water leaks, rips, tears, or exposed by failure of upper layer. Wear half face piece respirator and disposable coveralls during removal of sheeting. Carefully roll sheeting away from walls to centre of asbestos work area. As sheeting is rolled away from walls and corners, HEPA vacuum visible debris.

3.10.3 While removing top layer of sheeting from surfaces protected by two layers of sheeting, cut lower sheeting so as to expose horizontal surfaces that may be contaminated with asbestos debris. HEPA vacuum any visible debris.

3.10.4 Place polyethylene sheeting, seals, tape, cleaning material, clothing, and other contaminated waste in asbestos waste receptors for transport. Remove with HEPA vacuum any debris which may have fallen behind sheeting.

3.10.5 Clean asbestos work area(s), equipment and access area, washing/showering room, and other enclosures that may have been contaminated during work.

3.10.6 Clean asbestos waste receptors and equipment used in work and remove from asbestos work area(s) via drum and equipment decontamination enclosure system, at an appropriate time in sequence.

3.10.7 Remove hoardings, temporary lighting, equipment and facilities provided for work. A final review may be carried out by the Owner's Consultant to ensure that no dust or debris remains. Asbestos abatement contractor responsible for inspecting and cleaning all adjacent spaces to the asbestos abatement work area. Adjacent work areas to be left free of construction related dust and debris.

3.11 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

3.11.1 When cleanup is complete re-establish mechanical and electrical systems to remain operative in proper working order. Arrange for, and pay costs of electrical or mechanical repairs needed due to work of this Section.

3.11.2 Make good all damage at completion of work not identified in pre-removal survey.

3.12 AIR MONITORING

3.12.1 The Owner's Consultant may arrange for air samples to be taken from commencement of work until completion of cleaning operations, both inside and outside of asbestos work area(s) enclosures in accordance with NIOSH methods or with Fibrous Aerosol Monitor manufactured by MIE Inc., Bedford, Mass.

3.12.2 If air monitoring or visual inspection shows that areas outside current asbestos work area(s) enclosure or decontamination facilities are contaminated above 0.01 fibre/cc., clean these areas in same manner as that applicable to asbestos work areas, at no cost to the Owner.

3.12.3 Air clearance sampling will be done in accordance with O. Reg. 278/05. The air clearance sampling will be conducted following aggressive air sampling methods as outlined in US Environmental Protection Agency “Guidance for Controlling Asbestos-Containing Materials in Buildings – Published June 1985 – Appendix M – Section M.1.5”. All equipment required for aggressive air sampling (other than pumps for samples) will be provided by contractor conducting abatement work. A minimum of 2,400 L of air will be collected for each sample. An abatement area is deemed clear only if every air sample collected within the affected area has a concentration of fibres that does not exceed 0.01 fibres/cc. The number of air clearance samples to be collected are based requirements of Table 3 within Ontario Regulation 278/05.

3.12.4 If air monitoring in work areas shows airborne fibre levels exceed normal levels for wet removal, workers shall use positive pressure supplied air respirators with full-face piece.

3.12.5 If final air sampling by the Owner’s Consultant shows that levels in completed asbestos work area do not exceed 0.01 fibres/cc. as determined by NIOSH 7400 Method - "A" counting rules, proceed with dismantling of enclosures.

3.12.6 Clearance level is < 0.01 f/cc.

3.13 INSPECTION

3.13.1 From commencement of work until completion of clean-up operations, the Owner’s Consultant may be present on a full time basis both inside and outside asbestos work area(s).

3.13.2 If asbestos work area(s) or adjacent areas are found unacceptable in accordance with standards specified or required by authorities having jurisdiction, correct such deficiencies at no cost to the Owner.

3.13.3 Pay cost to provide re-inspection of work found not to be in accordance with these specifications and requirements of authorities having jurisdiction.

3.14 WASTE TRANSPORT AND DISPOSAL

3.14.1 Conform to requirements of Regulation 347/90 as amended - General Waste Management under Environmental Protection Act for Waste Management, transporting and disposal of hazardous waste.

3.14.2 Check with dump operator to determine type of waste containers acceptable.

3.14.3 Ensure shipment of containers to dump is taken by waste hauler licensed to transport asbestos waste. Waste hauler in possession of valid Ministry of Environment Certificate

of Approval to transport asbestos waste.

3.14.4 Each load requires completion of bill of lading showing type and weight of hazardous waste being transported. Provide copies of bill of lading indicating acceptance of waste at landfill.

3.14.5 Co-operate with Ministry of Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the Owner.

3.14.6 Ensure dump operator is fully aware of hazardous material being dumped.

3.14.7 Ensure that containers used for dumping are locked and covered at all times.

END OF SECTION

1 General

1.1 **GENERAL REQUIREMENTS**

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 **RELATED WORK**

1.2.1 Section 02 13 81 – Type 1 Asbestos Removal

1.2.2 Section 02 13 82 – Type 2 Asbestos Removal

1.2.3 Section 02 13 83 – Type 3 Asbestos Removal

1.3 **DESCRIPTION OF WORK**

1.3.1 Types of asbestos present: Chrysotile present within mechanical pipe fitting insulation and heat shield on light fixture.

1.3.2 Friable and non-friable asbestos-containing materials (and types of asbestos present) identified can be found within the Safetech Environmental Limited report titled "*Designated Substances and Hazardous Building Materials Assessment Report, Demolition Project, 1615 Dufferin Street, Toronto, Ontario"* issued January 13, 2025.

1.3.3 Type 2 Glove Bag operations can be applied for the removal of asbestos containing mechanical pipe fittings and heat shield insulation. Glove bag removal will only be permitted where materials noted for removal are in good condition and no asbestos-containing debris is present. Include all jacketing or covering on insulation. Use glove bag and dispose of as specified in Section 02 13 84.

1.3.4 Seal surfaces from which asbestos has been removed and surfaces contaminated with asbestos with slow drying sealer.

1.4 **DEFINITIONS**

1.4.1 **HEPA Filter:** High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting 0.3 micrometer aerosol.

1.4.2 **Friable Material:** Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

1.4.3 **Authorized Visitor(s):** Owner's Consultant or persons representing regulatory agencies, and person(s) authorized by either party.

1.4.4 **Asbestos Work Area(s):** Area(s) where work takes place which will, or may disturb asbestos-containing material, including overspray and fallen material, or settled dust that may contain asbestos.

1.4.5 **Glove Bag:** Prefabricated, 0.25 mm (10 mil) minimum thickness polyvinyl-chloride bag with integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elasticized ports. Bag

equipped with reversible double-pull double throw zipper on top to facilitate installation on pipe and progressive movement along pipe and with straps for sealing ends to bag around pipe:

1.5 **REGULATIONS**

1.5.1 Comply with Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations made under The Occupational Health and Safety Act, Ontario Regulation 278/05 and local requirements pertaining to asbestos, provided that in case of conflict with these Specifications, the most stringent requirements shall apply.

1.5.2 Handle and dispose of contaminated waste as required under Ontario Regulation 347/90, as amended by O. Reg. 234/11, General Waste Management made under The Environmental Protection Act.

1.5.3 Not later than ten days before commencing asbestos work on this project, notify in writing Ontario Ministry of Labour, Construction Health and Safety Branch, that hazardous asbestos work area will exist. Orally notify them before commencing work.

1.5.4 Notify sanitary landfill site in accordance with requirements of Ontario Regulation 347/90, as amended by O. Reg. 234/11, General Waste Management.

1.5.5 Contractor shall ensure that:

1.5.5.1 Measures and procedures prescribed under Occupational Health & Safety Act and regulations are carried out.

1.5.5.2 Every employee and every worker on project complies with applicable act and regulations.

1.5.5.3 Health and safety of workers and public is protected.

1.5.5.4 All material handling, and associated equipment conform to and are operated in accordance with "Workplace Hazardous Materials Information System" (WHMIS).

1.5.5.5 Advise Owner whenever work is expected to be hazardous to employees and/or public.

1.5.5.6 Contractor may be requested to provide information on their health and safety record.

1.6 **QUALITY ASSURANCE**

1.6.6 Ensure work proceeds to schedule and meets all requirements of this Section. Perform work so airborne asbestos and asbestos waste does not contaminate areas outside glove bag.

1.6.7 Pay cost to Owner of inspection and air monitoring performed as result of failure to perform work satisfactorily regarding quality, safety, or schedule.

1.6.8 Use only skilled and qualified workers for all trades required for this work.

1.7 **SUBMITTALS**

1.7.1 **Before commencing work**

1.7.1.1 Obtain and submit all necessary permits for transporting and disposal of asbestos waste.

1.7.1.2 Submit names of supervisory personnel who will be responsible for asbestos work area(s). One of supervisors must remain on Site at all times asbestos removal or clean-up is occurring. Submit proof that supervisory personnel have attended training course on asbestos control (2 day minimum duration) and have performed supervisory function on at least two other asbestos removal projects.

1.7.1.3 Submit proposed schedule showing phasing and scheduling for glove bag removal.

1.7.1.4 Submit list of pre-existing damages for acceptance by Owner's Consultant.

1.8 **WORKER AND VISITOR PROTECTION**

1.8.1 **Instructions:** Before entering asbestos work area(s), instruct workers and visitors in use of respirators, use of glove bags, and all aspects of work procedures and protective measures. Instruction shall be provided by a competent person as defined by Occupational Health and Safety Act.

1.8.2 **Respirators:** Workers performing glove bag removal shall use non-powered air half face respirator with minimum P100 filter cartridges in accordance with NIOSH Part 84 requirements. Provide approved respirators to visitors. Replace filters daily or test according to manufacturer's specifications and replace as indicated. Respirators shall be acceptable to Occupational Health Branch of Ministry of Labour. Provide instruction to users in use of respirators, including qualitative fit testing. No user shall wear facial hair which affects seal between respirator and face. Maintain respirators in proper functioning and clean condition, or remove from site.

1.8.3 **Protective Clothing:** Provide workers and visitors with full body coveralls with integral hoods. Protective coveralls are required only if glove bag is ripped, cut or otherwise opened and cannot be easily and quickly repaired. Once coveralls are worn in asbestos work area, dispose of as contaminated waste. Workers and visitors shall also wear other protective apparel required by Ministry of Labour construction regulations.

1.8.4 Do not eat, drink, smoke or chew gum or tobacco in asbestos work area.

2 **PART 2 - PRODUCTS**

2.1 **MATERIALS**

2.1.1 **Tape:** Tape suitable for sealing polyethylene to surface encountered under both wet conditions using amended water, and dry conditions.

2.1.2 **Wetting Agent:** Non-foaming surface active agent; mixed with water in concentration to provide thorough wetting of asbestos fibre: Asbesto-Wet or equivalent.

2.1.3 **Amended Water:** Water with wetting agent added.

2.1.4 **Asbestos Waste Receptors:** Two separate containers of which at least one shall consist of 0.15 mm (6 mil) minimum thickness sealable polyethylene bag. Other container may be 0.15 (6 mil) minimum thickness polyethylene bag. Other container shall be adequate to prevent perforating rips, or tears during filling, transport or disposal. Containers must be acceptable to disposal site selected and Ministry of Environment, and shall be clearly marked to indicate that contents contain asbestos.

2.1.5 **Sealer:** Sealer for purpose of trapping residual fibre debris. Product must have flame spread and smoke development ratings both less than 25. Product shall leave no stain when dry. Chil-Abate CP 210, Childers Products Company, Mississauga, Ontario.

2.1.6 **Glove Bag:** Prefabricated, 0.25 mm (10 mil) minimum thickness polyvinyl-chloride bag with integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elasticized ports. Bag equipped with reversible double-pull double throw zipper on top to facilitate installation on pipe and progressive movement along pipe and with straps for sealing ends to bag around pipe: Safe-T-Strip manufactured by Hazmasters Equipment Inc., Pickering Ontario, in configurations suitable for work.

2.1.7 **Sprayer:** Garden type portable manual sprayer, low velocity, capable of producing of fine spray.

2.1.8 **HEPA Vacuum:** Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge.

2.1.9 **Securing Straps:** For glove bag, reusable nylon straps at least 1" wide with metal tightening buckle for sealing ends of bags around pipe and/or insulation.

2.1.10 **Knife:** Knife with fully retractable blade for use inside glove bag.

3 PART 3 - EXECUTION

3.1 COMMENCE ASBESTOS REMOVAL WORK WHEN

3.1.1 Equipment, tools, furnishings, and stored materials which can be moved without disturbing asbestos-containing materials have been moved by Contractor.

3.1.2 Arrangements have been made for disposal of waste.

3.1.3 Asbestos work areas and parts of building required to remain in use are effectively segregated by walls or barricades.

3.1.4 Tools, equipment and materials waste receptors are on hand.

3.1.5 Arrangements have been made with Owner for work area security.

3.1.6 Signs are displayed in all areas where access to asbestos work area is possible. Such signs shall read:

CAUTION
Asbestos Hazard Area
No Unauthorized Entry
Wear assigned protective equipment
Breathing asbestos dust may cause serious bodily harm.

3.1.7 Owner's Consultant has been notified of intention to proceed and has reviewed equipment and procedures.

3.1.8 Proof of notification to Ministry of Labour has been submitted (greater than one square metre of pipe or pipe fitting insulation).

3.2 **FITTING INSULATION AND HEAT SHIELD REMOVAL**

3.2.1 Isolate asbestos work area with tape barriers, saw-horses, or other barriers posted with notices marking area as asbestos removal area. Workers performing glove bag removal shall wear half face piece air purifying respirators with P100 HEPA filter cartridges.

3.2.2 Pre-clean surface of fitting of fallen or damaged insulation by HEPA vacuuming or damp wiping.

3.2.3 Spray areas of damaged jacketing with mist of amended water. Tape over damage, or wrap with polyethylene sheeting, to provide temporary repair.

3.2.4 If fitting insulation is not jacketed spray surface with mist of amended water and wrap entire length of fitting with 0.15 mm (6 mil) polyethylene sheeting taped in place.

3.2.5 Place tools necessary to remove insulation in tool pouch. Zip bag onto fitting and seal all openings to fitting with cloth securing straps. For valve bags seal valve cover with wire tie or equivalent.

3.2.6 Place hands into gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag. Roll jacketing carefully to minimize possibility of ripping or puncturing bags.

3.2.7 Insert nozzle of spray pump into bag through valve and wash down fitting and interior of bag thoroughly. Use one hand to aid washing process. Wet surface of insulation in lower section of bag and exposed end of asbestos insulation remaining on fitting by spraying with water prior to moving bag.

3.2.8 If bag is to be moved along fitting, move bag, re-seal to fitting using double-pull zipper to pass hangers. Repeat stripping operation.

3.2.9 If bag is removed from fitting for use on new fitting, seal interior zip lock. Reinstall in new location before opening zip lock.

3.2.10 If glove bag is ripped, cut or opened in any way, cease work and repair with tape before continuing work. If opening is not easily repaired workers in area shall put on disposable coveralls. Clean spilled material with HEPA vacuum or wet washing.

3.2.11 To remove bag once filled, wash top section and tools thoroughly. Place tools in one hand (glove), pull hand out inverted, twist to create separate pouch, double tape to seal. Cut between tape and place pouch with tools in next glove bag; or into water bucket, open pouch underwater, clean tools and allow to dry.

3.2.12 Pull waste disposal bag over glove bag before removing from fitting. Remove securing straps. Unfasten zipper.

3.2.13 After removal of bag ensure fitting is clean of residue. If necessary, after removal of each section of asbestos, HEPA vacuum surfaces of fitting or wipe with wet cloth. Ensure that surfaces are kept free of wet sludge.

3.2.14 Before completion of shift, apply sealer to all surfaces of freshly-exposed fitting. Apply heavy coat of sealer to exposed ends of asbestos insulation to remain.

3.2.15 Once bag filled dispose of as contaminated waste. Do not reuse bag.

3.3 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

3.3.1 Reconstruct items demolished (if required) which are to remain and reinstall objects and items in their proper positions, which were removed to facilitate asbestos removal operation. Reconstruction and reinstallation shall be by tradesmen qualified in work being reinstalled or reconstructed.

3.3.2 Re-establish mechanical and electrical systems in proper working order. Arrange for, and pay costs of, electrical or mechanical repairs needed due to this work.

3.3.3 Make good all damage at completion of work not identified in pre-removal survey referred to in para. 1.7.1.4.

3.4 AIR MONITORING

3.4.1 Owner’s Consultant may arrange for air samples to be taken from commencement of work until completion of cleaning operations in accordance with NIOSH methods or with Fibrous Aerosol Monitor, MIE Corporation, Bedford, Mass.

3.4.2 If air monitoring shows that asbestos work area is contaminated above 0.01 fibre/mL, clean these areas by HEPA vacuum or wet methods.

3.5 INSPECTION

3.5.1 From commencement of work until completion of clean up operations, Owner’s Consultant may be present periodically both inside and outside asbestos work area(s).

3.5.2 If asbestos work area(s), or adjacent areas, are found unacceptable in accordance with standards specified or required by authorities having jurisdiction correct such deficiencies at no cost to Owner.

3.5.3 Pay cost to provide inspections of work found not in accordance with these specifications and requirements of authorities having jurisdiction.

3.6 WASTE TRANSPORT AND DISPOSAL

3.6.1 Conform to requirements of Regulation 347 as amended by O. Reg. 234/11, General Waste Management, under Environmental Protection Act for transporting and disposal of hazardous waste.

3.6.2 Check with dump operator to determine type of waste containers acceptable.

3.6.3 Ensure shipment of containers to dump is by waste hauler licensed to transport asbestos waste.

3.6.4 Each load requires completion of bill of lading showing type and weight of hazardous waste being transported. Provide proof (waste receipts) of proper disposal of asbestos material upon request by Owner's Consultant.

3.6.5 Co-operate with Ministry of Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to Owner.

3.6.6 Ensure dump operator is fully aware of hazardous material being dumped.

3.6.7 Ensure disposal bins are covered and locked at all times.

End of Section