Halton District School Board

Halton District School Board **Addendum No. 1**

RFT 21-257 Interior Renovations – Joseph Gibbons PS

The following, issued by the Halton District School Board August 4, 2021, shall be incorporated in the specifications and shall form part of the proposal document for the above.

REVISED:

The mandatory pre-bid site meeting has been revised to Monday, August 9, 2021 at the main office of Joseph Gibbons Public School located at 41 Moore Park Crescent, Georgetown, ON L7G 2T3. The Mandatory Site Meeting will start at 11:00 a.m.

Bidders must sign in upon their arrival. Bidders arriving after the specified start time will not be permitted to participate in the meeting, will be disqualified from the project, and asked to remove themselves from the site. Failure to be present and to sign in at all site visits will result in the disqualification of your submission
Bidders shall follow Public Health and HDSB Covid-19 protocols while on site.

ATTACHED:

- Asbestos Abatement Specifications – Joseph Gibbons PS (25 pages)
- Revised Pre-Renovation Designated Substances and Hazardous Materials Survey (40 pages)

PAGE 1 OF 66
END OF ADDENDUM 1

ASBESTOS ABATEMENT SPECIFICATIONS
JOSEPH GIBBONS PUBLIC SCHOOL

ASBESTOS ABATEMENT SPECIFICATIONS
Joseph Gibbons Public School

TABLE OF CONTENTS

At Rear:

Drawing No. 30065551-1 – Locations of Work Areas – First Floor Plan

1.0 PART 1 – GENERAL

1.1 GENERAL

.1 The requirements as set out in these specifications may, at times, exceed the procedures detailed in the various applicable regulations. All work shall be done in compliance with the specifications AND the regulations. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

1.2 OUTLINE OF WORK

.1 The intent of the work is to remove select asbestos-containing materials to the extent practicable, in designated areas in the facility prior to renovations.

.2 Replacement of removed materials is not part of this contract unless otherwise noted.

.3 Coordinate all work with the General Contractor and sub trades as required.

.4 Refer to architectural, mechanical and electrical drawings for additional details.

.5 All mechanical and electrical isolations and disconnects required to facilitate asbestos abatement and clean demolition work being performed by the asbestos abatement contractor, will be performed by the General Contractor's sub trades prior to commencement of remedial work.

.6 Removal of doors and associated hardware, millwork, tack boards, plumbing fixtures and other attachments required to facilitate asbestos abatement and clean demolition work being performed by the asbestos abatement contractor, will be performed by the General Contractor's sub trades prior to commencement of remedial work.

.7 Florescent light tubes in ceiling assemblies being demolished by the asbestos abatement contractor will be removed by the General Contractor's sub trades prior to commencement of remedial work.

.8 If required, electrical hookups of GFI panels will be performed by the General Contractor's licensed electrician in compliance to all regulatory requirements and codes.

.9 Provide all supervision, labour, equipment, tools, materials, waste management, haulage and disposal, and other services, as required, for undertaking and completing all the work, as detailed below.

.10 **Work Area 1 – Rooms19, 28, 30, 30A, 32, 100A and 102**

.1 Prepare the areas as indicated above and on the attached floor plans for Type 2 enclosure asbestos removal operations.

.2 Refer to Architectural Drawings for additional details.

.3 Supply and install scaffolding in accordance with all applicable regulations, to provide sufficient and safe access to the work areas.

.4 Remove and dispose the following as clean demolition waste:

.1 Door frame in Rooms 30A.

.2 All baseboards in Room 30A.

.3 Baseboards attached to gypsum board walls and column enclosures being demolished.

.5 Remove and dispose the following as asbestos waste:

.1 Entire gypsum board ceiling assemblies, including but not limited to, gypsum board and associated asbestos-containing joint compounds, light fixtures and ceiling support systems in Rooms 30A and 100A. Light fixtures and ceiling support systems may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.

.2 Select wall sections, including but not limited to, gypsum board and associated asbestos-containing joint compounds and wall framing materials in Rooms 19, 28, 30, 30A, 32 and 102 and gypsum board column enclosure including but not limited to, gypsum board and associated asbestos-containing joint compounds and gypsum board support systems on column in Room 102. Wall framing materials and gypsum board support systems may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris. The General Contractor will clearly identify all walls and column enclosures to be demolished.

.6 Using Hand tools, remove and dispose as asbestos waste, all asbestos-containing vinyl floor tiles and associated asbestos-containing mastic in Room 30A.

.1 Using power tools (power grinders) that are attached to dust collecting devices equipped with HEPA filters, remove and dispose as asbestos waste, all asbestos-containing vinyl floor tile mastic from concrete floor.

.1 Dust collecting devices with HEPA filters (HEPA vacuums) that are attached to power tools, must have adequate CFM capacity to properly collect mastic and residual dust generated by the power grinding operations.

.2 All power tools used to remove mastics, must have an integral shrouding system designed to properly contain dust and debris generated by the power grinding operations.

.11 **Work Area 2 – Rooms 103 and 30**

.1 Prepare the areas as indicated above and on the attached floor plans for a Type 2 enclosure asbestos removal operation.

.2 Refer to Architectural Drawings for additional details.

.3 Supply and install scaffolding in accordance with all applicable regulations, to provide sufficient and safe access to the work areas.

.4 Remove and dispose as clean demolition waste, all baseboards.

.5 As a precautionary measure, remove and dispose as asbestos waste, the following non-asbestos-containing gypsum board applications attached to gypsum board walls with asbestos-containing joint compounds:

.1 Entire ceiling assembly, including but not limited to, gypsum board with non-asbestos-containing joint compounds, light fixtures and ceiling support systems. Light fixtures and ceiling support systems may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.

.2 Select wall sections, including but not limited to, gypsum board and associated asbestos-containing joint compounds and wall framing materials. Wall framing materials may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris. The General Contractor will clearly identify all walls to be demolished.

.12 **Work Area 3 – Rooms 2 and 3 and Adjacent Outdoor Areas**

.1 Prepare the areas as indicated above and on the attached floor plans for Type 2 enclosure asbestos removal operations.

.2 Refer to Mechanical Drawings for additional details.

.3 If required, supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.4 In the outdoor portions of the work areas enclosures are not required. Install *asbestos warning* tape to clearly identify and delineate outdoor work areas.

.5 Establish a measurable negative pressure differential in the indoor enclosure work areas by using fan/filter units equipped with High Efficiency Particulate Air (HEPA) filters. Units must have been integrity-tested within the last two months and are to be exhausted directly outdoors.

.6 Using Type 2 asbestos removal procedures, using hand tools or power tools attached to dust collecting devices equipped with HEPA filters, make holes in the concrete block wall assemblies in one block in each of the two work locations (a total of two concrete blocks) where coring the concrete block will be required to facilitate the installation of new piping penetrating the walls. Using HEPA vacuums, remove and dispose as asbestos waste, all accessible asbestos-containing vermiculite insulation present in the cavities of the concrete blocks accessed The General Contractor will clearly identify areas where core drilling is required in the concrete block.

.1 Using power tools (core drills) attached to dust collecting devices equipped with HEPA filters, core drill one hole through the concrete block wall assemblies in each of the two work locations (a total of two cores through the concrete block). Alternately, wet coring is acceptable. For costing purposes, allow for a core diameter of up to 15 cm. The General Contractor will clearly identify areas where core drilling is required and the diameter of the cores.

.2 Install pipe sleeves, supplied by the General Contractor, into the core locations in the concrete block wall assemblies (a total of two pipe sleeves).

Apply a suitable caulking or packing material, supplied by the General Contractor, on the interior and exterior sides of the wall assemblies in the voids located between the pipe sleeve walls and adjacent concrete block to enclose and seal all vermiculite insulation remaining in the concrete block wall cavities.

.1 Alternately, supply and install a suitable expandable foam into the core voids applying the foam as far as it will reach inside the adjacent concrete block cavities, then fill entire voids with expandable foam. This will allow the General Contractor's sub trades to remove expandable foam as required to install the pipe sleeves and install the pipe sleeves at a later date.

.13 **Work Areas 4 – Locations To Be Determined**

.1 Prepare locations pre-determined by the General Contractor for Type 2 asbestos removal operations.

.2 Supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.3 Perform localized removals of gypsum board with asbestos-containing joint compounds to facilitate mechanical and electrical modifications and/or assist General Contractor's sub trades in attaching items to gypsum board applications with asbestos-containing joint compounds.

.4 Using power tools attached to dust collecting devices equipped with HEPA filters, mechanically fasten items supplied by the General Contractor to gypsum board applications with asbestos-containing joint compounds. The General Contractor will supply mechanical fasteners and items to be fastened and will clearly identify locations where attachments are required.

.5 For costing purposes, allow for two workers over a 10-hour shift (including travel time) per mobilization. Allow for two (2) separate mobilizations.

.14 **Work Area 5 – To Be Determined**

.1 Prepare locations pre-determined by the General Contractor for Type 2/glovebag asbestos removal operations.

.2 Supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.3 Remove and dispose, as asbestos waste, accessible asbestos-containing thermal insulation from select piping to allow for modifications to mechanical systems and mechanical tie-ins. The General Contractor will clearly mark all locations for thermal insulation removals. For costing purposes, allow for twelve glovebag removal operations of less than one square metre of asbestos thermal insulation per glovebag location per mobilization. For costing purposes allow for two workers over a 10-hour shift (including travel time) per mobilization. Allow for two (2) separate mobilizations.

.15 Joint compound on gypsum board applications contains 1.1% chrysotile asbestos. Vinyl floor tiles contain 2.6% to 5.4% chrysotile asbestos. Vinyl floor tile mastic contains 4% chrysotile

asbestos. Thermal insulation on pipe fittings contains 15% to 57% chrysotile asbestos. Vermiculite concrete block-fill insulation contains actinolite asbestos.

.16 All waste is to be removed from the site and disposed. Asbestos waste disposal bins are not to be left on School property unless fully enclosed with an integral metal roof system and locked. Disposal bins must be removed immediately on completion of work.

.17 **Schedule**

.1	Mobilization	To be Coordinated with the General Contractor
.2	Complete Work and Demobilize	To be Coordinated with the General Contractor

1.3 GENERAL REQUIREMENTS

.1 The location and availability of utilities including water, sewer and electrical power is to be determined on site. The Asbestos Contractor shall co-operate with all others on site. Should there be any disagreement, or should Contractors be unable to reach a satisfactory working arrangement, the Asbestos Consultant shall determine the manner for proceeding. The Asbestos Contractor shall not be entitled to any additional payment.

.2. The Asbestos Contractor is responsible for making all arrangements, and for paying for the disposal of all waste materials in accordance to all applicable government laws and regulations including local, provincial and federal.

.3 The Asbestos Contractor is advised that extended hours of work may be required to meet the schedules as detailed in the Scope of Work and shall allow for the cost thereof including shift premiums and overtime. The Asbestos Consultant shall be advised in writing at least four days in advance of the proposed working hours.

.4 The Asbestos Contractor shall furnish and post on site the name and current phone number of an authorized representative(s) who can be contacted on a 24-hour basis in case of an emergency.

.5 All precautions will be taken to prevent the spread of contaminated material and to protect all parties including Asbestos Contractor's personnel, Owner's employees and the public from asbestos dust exposure during the course of the work. The documents outline the minimum levels of precaution to be taken.

.6 **All work shall be done in compliance with the specifications and the Ontario Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* – made under the *Occupational Health and Safety Act***. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

.7 Contract conditions include, but are not limited to, complying with all Regulations, taking all precautions necessary to control the release of asbestos fibres within the work areas, preventing the release of asbestos fibres outside the work areas, and providing appropriate protection from exposure to asbestos fibres for all parties. Failure to meet any of these conditions will be considered a fundamental breach of the Contract.

.8 The Asbestos Consultant will visit the site at his/her discretion to familiarize himself/herself with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents.

.9 The Asbestos Consultant shall have the authority to immediately stop the Work through a written instruction if, in his opinion, the Work does not conform to the requirements of the Contract Documents, or if continuance of the Work could subject the Owner, his employees or the public to a hazardous condition. The Work shall not recommence until such time as the deficiency or hazardous situation has been corrected and a written notice to proceed has been issued by the Asbestos Consultant.

.10 If the Asbestos Contractor fails to comply with requirements dealing with the control of asbestos fibres and the health and safety of Asbestos Contractor employees, Asbestos Consultant and Owner personnel or the Public, the Owner, or the Owner's representative, may verbally instruct the Asbestos Contractor to cease work immediately with written confirmation to follow within two working days. If the Asbestos Consultant gives a written statement to the Owner and the Asbestos Contractor that sufficient cause exists, the Owner may notify the Asbestos Contractor in writing that he is in default of his contractual obligations.

.11 Any employee shall be replaced, at the written request of the Asbestos Consultant, if working, or causing others to work, in violation of O.Reg. 278/05.

.12 The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following and shall name the Owner and Arcadis Canada Inc. as additional insureds:

.1 General Liability $5 million;
.2 Automotive Liability $2 million;
.3 Pollution Liability $5 million including asbestos operations.

.13 The supervisor must have proven experience and proficiency in the type of Work being undertaken under this Contract.

.14 The supervisor shall be replaced, at the written request of the Asbestos Consultant, if found to be incompetent or inattentive to the needs of the project.

.15 Where standards of performance are specified or implied and the Work does not comply with the performance specified or implied, such deficiencies shall be corrected as directed by the Asbestos Consultant. Any subsequent testing shall be done at the Asbestos Contractor's expense.

1.4 DEFINITIONS

.1 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol (HEPA) filtered vacuum equipment acceptable to Health and Welfare Canada and meeting U.S. Military Standard 282. This vacuum equipment shall have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 micrometer or larger.

.2 *Polyethylene sheeting sealed with tape:*

.1 Polyethylene sheeting of thickness specified sealed with tape along all edges, around penetrating objects, over cuts and tears, and elsewhere as required to

provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through the sheeting into a clean area.

.3 *Inspector:*

.1 Representative of Arcadis Canada Inc. (Arcadis) designated by the owner to provide inspection and air monitoring of the Contractor's work.

.4 *Authorized Visitor:*

.1 Representative of the building owner, Arcadis, and/or persons representing regulatory agencies.

.5 *Amended Water:*

.1 Water with a non-ionic surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.

.6 *Airlock:*

.1 A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area typically consisting of two curtained doorways at least 1.5 m apart.

.7 *Curtained Doorways:*

.1 An arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed by placing two overlapping sheets of polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway.

.2 All free edges of polyethylene shall be reinforced with duct tape and the bottom edge shall be weighted to ensure proper closing. Each polyethylene sheet shall overlap openings an additional 1/3 of the doorway width.

.8 *Operating Area:*

.1 Area where no removal or repair Work is underway.

.9 *Clean Area:*

.1 Either an operating area or an area in which removal Work has already been completed.

.10 *Work Area:*

.1 Where the actual removal of asbestos-containing materials take place.

.11 *Negative Pressure:*

.1 A system which extracts air from the work area and discharges this air directly outside the building, sufficient to maintain a minimum pressure differential of 0.5 mm (0.02 inch) of water column relative to adjacent areas outside of work areas. This air extraction system is to be equipped with a High Efficiency Particulate Aerosol filtering system before discharge.

.12 *Confined Space:*

.1 A fully or partially enclosed space,

.1 that is not both designed and constructed for continuous human occupancy, and

.2 in which atmospheric hazards may occur because of its construction, location or contents or because of work that is done in it.

1.5 REGULATORY AGENCIES

.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in any case of conflict among those requirements or with these Specifications the more stringent requirement shall apply. These include, but are not limited to, the following:

.1 Ontario Ministry of Labour, Occupational Health and Safety Division, *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*, O.Reg. 278/05 – made under the *Occupational Health and Safety Act.*

.2 Ontario Ministry of the Environment *Regulation 347* (previously 309) under the Environmental Protection Act (as amended by O.Reg. 175/83; O.Reg. 574/84; O.Reg. 322/85), June 17, 1985.

.3 Government of Canada *Regulations Respecting the Handling, Offering for Transport and Transporting of Dangerous Goods*. (Extract from the Canada Gazette Part II, dated February 6, 1985.)

.4 Government of Ontario *Occupational Health and Safety Act, 1978 and Regulations for Construction Projects*.

.5 Office of the Fire Commissioner of Canada.

.6 Ontario Electrical Safety Code.

.7 Regulation 647 RRO ‘70 of the Plumbing Code.

.2 *Patents:*

.1 It shall be the Contractor’s responsibility to ensure that all applicable patent laws are complied with.

1.6 FIRE SAFETY PLAN

.1 Prior to initiating any work on the site, the Contractor shall prepare and submit in writing to the Engineer a Fire Safety Plan. The Plan shall be in accordance to the requirements set

forth in Section 2.14, Construction and Demolition Sites, of the National Fire Code and shall include:

.1 the designation and organization of site personnel to carry out fire safety duties, including fire water services if applicable;

.2 the emergency procedures to be used in the case of fire, including:

.1 sounding the fire alarm;

.2 notifying the fire department;

.3 instructing site personnel on procedures to be followed when the alarm sounds; and

.4 fire fighting procedures;

.3 the control of fire hazards in and around the building;

.4 maintenance of fire fighting facilities; and

.5 special requirements as may be identified by the building owner.

.2 Implementation of the Fire Safety Plan shall be the sole responsibility of the Contractor, and the above shall, in no way, limit the Contractor's statutory and regulatory obligations. During the work, the Fire Safety Plan shall be prominently displayed at the site and its requirements included in site safety training and awareness programs.

1.7 SUBMITTALS

1.7.1 Submittals Before Commencing Work

.1 The following documentation shall be submitted to the Inspector with a dated covering letter listing attachments a minimum 48 hours prior to commencement of the Work:

.1 *Permits and Notifications:*

.1 All necessary permits for transporting and disposal of asbestos waste. Submit proof satisfactory to Inspector that suitable arrangements have been made to receive and properly dispose of asbestos waste. Copies of all Notifications required by Section 1.11.

.2 *Material Safety Data Sheets:*

.1 Material Safety Data Sheets, or equivalent, for any sealant, surfactant or other material proposed for use. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

.3 *Supervisory Personnel:*

.1 Names of supervisory personnel who will be responsible for work area(s). **One of these supervisors must remain on site at all times asbestos removal or cleanup is occurring**. Submit proof that supervisory

personnel have over 2000 hours experience on asbestos abatement projects, have performed supervisory functions on at least two other asbestos projects and have achieved the level of training as set out by the Regulation.

.4 *Schedule:*

.1 Provide a bar chart indicating planned progress for critical activities as required under **Scope of Work** as well as additional information listed below a minimum of 48 hours prior to commencement of any preparatory work indicating:

.1 shifts to be worked;

.2 proposed workforce;

.3 starting date;

.4 estimated date of commencement of asbestos removal;

.5 estimated date of completion of asbestos removal;

.6 estimated completion date.

.5 *Insurance:*

.1 Provide a Certificate signed by the insurance agency naming the Owner and Arcadis Canada Inc. as co-insureds.

2. The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following:

.1 General Liability $5 million;
.2 Automotive Liability $2 million;
.3 Pollution Liability $5 million including asbestos operations.

.3 The Asbestos Contractor must provide thirty (30) days notice of cancellation or amendment of coverage.

.6 *Fire Safety Plan*:

.1 In accordance to Article 1.6 above.

.7 *Confined Space:*

.1 If a work area, or part thereof, is a confined space, the contractor shall submit:

.1 a co-ordination document (see Section 1.13.1.1);

.2 a written program (see Section 1.13.1.2);

.3 a written plan (see Section 1.13.1.4).

.8 *Asbestos Training:*

.1 A letter certifying that:

(a) every worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry of Training, Colleges and Universities; and

(b) every supervisor of a worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities. O.Reg. 278/05, s. 20(1).

1.7.2 Submittals Before Commencing Asbestos Removal

.1 Proposed Work Area emergency exit procedures.

.2 Evidence (letter or other suitable documentation) of proper construction, inspection and installation of GFI panel by licensed electrician in compliance to all regulatory requirements and codes.

1.7.3 Submittals Upon Completion of Work

.1 Asbestos waste haulage and disposal documentations including Bills of Lading, waste transfer documents and dump receipts.

.2 All documentation as specified in the contract General Conditions including, but not limited to, Workplace Safety and Insurance Board Certificate, Statutory Declarations and Proof of Publication of Substantial Performance.

1.8 EXISTING CONDITIONS

.1 Joint compound on gypsum board applications contains 1.1% chrysotile asbestos. Vinyl floor tiles contain 2.6% to 5.4% chrysotile asbestos. Vinyl floor tile mastic contains 4% chrysotile asbestos. Thermal insulation on pipe fittings contains 15% to 57% chrysotile asbestos. Vermiculite concrete block-fill insulation contains actinolite asbestos.

.2 Existing conditions are documented in a report prepared by Arcadis Canada Inc. for the Halton District School Board entitled "*Revised Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 14 Moore Park Cresent, Georgetow, Ontario"* dated July 14, 2021, which is included with the tender documents.

.3 Masonry applications may contain silica. Paint applications may contain lead and mercury. Appropriate dust control procedures and respiratory protective equipment are to be used if disturbing these materials.

1.9 RESTRICTIONS

.1 Do not allow smoking, eating or drinking in the work area.

.2 Do not allow entry to work area by unauthorized persons.

.3 Compressed air shall not be used in the work area.

.4 Open flames will not be permitted in the work area (including but not limited to torches and propane-fired heaters).

1.10 WORKER PROTECTION

.1 *Instructions:*

.1 Before commencing Work, instruct workers in all aspects of work procedures and protective measures.

.2 *Respiratory Protection:*

.1 Provide workers with personally issued and marked respiratory equipment acceptable to the Occupational Health and Safety Division of the Ontario Ministry of Labour, suitable for the asbestos exposure in the work area.

.2 Ensure that suitable respiratory protective equipment is worn by every worker who enters the work area. A respirator provided by an employer and used by a worker:

.1 shall be in accordance to O.Reg. 278/05, Section 13, respirators.

.2 shall be fitted so that there is an effective seal between the respirator and the worker's face;

.3 shall be assigned to a worker for the worker's exclusive use;

.4 shall be used and maintained in accordance with the procedures specified by the equipment manufacturer;

.5 shall be cleaned, disinfected and inspected after use on each shift, or more often if necessary;

.6 shall have damaged or deteriorated parts replaced prior to being used by a worker; and

.7 when not in use, shall be stored in a convenient, clean and sanitary location.

.3 *Protective Clothing:*

.1 Provide workers with protective clothing which shall:

.1 be worn by every worker who enters the work area,

.2 be made of a material which does not readily retain nor permit penetration of asbestos fibres,

.3 consist of full body covering including head covering with snug fitting cuffs at the wrists, ankles and neck,

.4 include suitable footwear, and

.5 be repaired or replaced if torn.

1.11 NOTIFICATIONS

.1 Notify, in writing, the local Fire Department of the extent of the work, including a copy of the Fire Safety Plan detailed in Article 1.6 above.

.2 Notify, orally and in writing, an inspector at the office of the Ministry of Labour nearest the work place of the operation. O.Reg. 278/05, Section 11.

.1 The written notice required by subsection (1) shall set out:

.1 the name and address of the person giving the notice;

.2 the name and address of the owner of the place where the work will be carried out;

.3 the municipal address or other description of the place where the work will be carried out sufficient to permit the inspector to locate the place, including the location with respect to the nearest public highway;

.4 a description of the work that will be carried out;

.5 the starting date and expected duration of the work; and

.6 the name and address of the supervisor in charge of the work.

.3 Notify the Inspector a minimum of eight hours prior to initiation of the following phases of the project:

.1 commencement of asbestos removal;

.2 commencement of sealant application;

.3 dismantling of the enclosure; and

.4 removing asbestos waste from the work area.

1.12 PROTECTION, REPAIR AND REPLACEMENT OF EQUIPMENT AND MATERIALS

.1 All equipment within and surrounding the work area shall be suitably protected by the Contractor during the work periods.

.2 All equipment damaged by the Contractor shall be replaced by the Contractor at no additional cost to the Owner.

1.13 CONFINED SPACES

Not Applicable

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

.1 *Polyethylene:*

.1 In 0.15 mm (6 mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

.2 *Tape:*

.1 Reinforced duct tape suitable for sealing polyethylene under both wet conditions using amended water, and dry conditions.

.3 *Wetting Agent:*

.1 50% polyoxethylene ester and 50% polyglycol or polyxyethylene ether, or equivalent approved product, and shall be mixed with water to a concentration to provide adequate penetration and wetting of asbestos-containing material.

.4 *Asbestos Waste Receptors:*

.1 0.15 mm (6 mil) minimum thickness appropriately labelled, sealable polyethylene bags and 0.15 mm (6 mil) minimum thickness sealable clear polyethylene bags.

.5 *Rip-Proof Polyethylene:*

.1 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.

.6 *Sealant:*

.1 Slow-drying sealant which remains tacky on surface for a minimum of 8 hours for purpose of trapping residual airborne fibre during settling period. Product must have flame spread and smoke development ratings both less than 50. **Product shall leave a clear finish when dry. Acceptable products "Childers Chil-Lock CP-240" or equivalent.**

2.2 EQUIPMENT

.1 All equipment brought on site must be thoroughly clean and free of all fibre, asbestos or otherwise, to the satisfaction of the Field Inspector. The Contractor will be fully responsible for the replacement of equipment rejected by the Inspector and for all costs resulting from site contamination due to dirty or faulty equipment.

.2 *Airless Sprayer:*

.1 Spray equipment for the application of amended water and sealant such as Graco Hydrospray or equivalent:

.1 Fine atomizing spray nozzle: Nozzle for airless sprayer capable of delivering not less than 4.5 L per minute of fine particle spray of amended water.

.3 *Garden Sprayer:*

.1 Hand pump-type pressure-can garden sprayer fabricated out of either metal or plastic equipped with a wand at the end of a hose that can deliver a stream or spray of liquid under pressure. **Only to be used on small removal and repair projects with the approval of the site inspector.**

.4 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol filtered vacuum equipment. Must have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 um or larger. HEPA filters must have been individually tested and certified by the manufacturer.

.2 All HEPA vacuums brought onto the job site shall be visibly clean, shall be in a good state of repair and shall be maintained in such state through completion of the project.

.5 *Glovebag:*

.1 Prefabricated, purposely made, 0.20 mm minimum thickness, polyvinyl chloride bag with integral 0.25 mm thick polyvinyl chloride gloves.

.2 Bag equipped with reversible double-pull, double-throw zipper on top to facilitate installation on pipe and progressive movement along pipe, with straps for sealing ends of bag around pipe, and with plastic flap under zipper for strength on pipe and to provide effective seal and with “ziploc” feature. Bags shall be secured using manufacturer’s prescribed securing devices. Approval must be obtained from the Inspector for use of Glovebags. Bag must be acceptable to the Inspector for use.

.3 Bag must have valves 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.

.6 *Negative Pressure Units:*

.1 Exhaust units fitted with High Efficiency Particulate Aerosol (HEPA) filters used to effect a negative pressure differential in the work area as compared to the immediate surrounding or clean area. The filtering system must be capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 um or larger. The HEPA filters must have been individually tested and certified by the manufacturer and bear a label certifying performance. The unit is to be fitted with instrumentation to indicate pressure differential across the HEPA filter with an audible alarm to sound at a preset low differential pressure.

.2 Construction of HEPA filter/fan cabinet units shall be airtight and all joints shall be caulked. The gasket seal between the filter housing and the retaining frame inside the cabinet shall provide a zero-leakage seal to avoid filter bypassing.

.3 **Each negative pressure unit shall be integrity tested at the work site prior to commencement of asbestos removal.** The procedure must include the testing of the integrity of the entire cabinet. Written confirmation of the test results are to be provided to the Inspector. Retesting may be requested by the Inspector and

performed by the Contractor should the unit be damaged or modified during the work.

.7 *Differential Pressure Recorder:*

.1 Instrument to monitor and record the differential pressure between the Work Area and Clean Area.

.1	sensitivity:	0.025 mm (0.001 inches) WC increments between +0.25 mm to -2.5 mm (+0.010 to -0.100 inches) WC
.2	accuracy:	+/- 1 %
.3	pressure alarms:	audible high and low level alarm programmable within operating range
.4	printout:	minimum 24 hr period at 15 minute intervals

.8 *Ground Fault Panel:*

.1 Electrical Panel equipped with ground fault circuit breakers of sufficient capacity to power all electrical equipment and lights in work area. All breakers shall have 5 mA ground fault protection. Panel should be complete with all necessary accessories including ground fault interrupter lights, test switch to ensure unit is working, and reset switch. Ground fault receptacles on extension cords shall not be used without written authorization by the Consultant.

.2 The GFI Panel must be constructed under the direction of a licensed Electrician and inspected by a licensed Electrician on a regular basis. Evidence of such construction and inspection shall be submitted to the Consultant prior to installation of the Panel on site.

3.0 PART 3 – EXECUTION

3.1 MAJOR ASBESTOS WORK (TYPE 3 OPERATIONS)

Not Applicable.

3.2 GLOVEBAG REMOVAL METHOD

.1 The Glovebag Removal Method may only be used with the written approval of the on-site inspector and advance notification, orally and in writing, to an inspector at the office of the Ministry of Labour nearest the work place of the operation if more than one square metre or more of insulation is to be removed.

.2 Preparation

.1 Separate the work place from the rest of the building by placing rope barriers at the boundary of the designated work area. The boundaries of the work area shall be a minimum of 3.0 m from the location of the insulation being removed. Identify the work area with clearly visible warning signs. The signs shall read in 35 mm (1 3/8") *sans serif* letters:

"CAUTION
ASBESTOS REMOVAL WORK IN PROGRESS.
ACCESS RESTRICTED TO PERSONS WEARING
PROTECTIVE CLOTHING AND EQUIPMENT".

.2 Disable the mechanical ventilation system serving the work area and seal all openings or voids, including ventilation duct to and from the working area.

.3 Ensure that all sources of heat for pipe systems have been shut off.

.4 Vacuum surfaces of insulating material using a vacuum equipped with a HEPA filter. Ensure that all friable material that is lying on the surface of any article, thing or place in the work area is cleaned up and removed by damp wiping or by using a vacuum equipped with a HEPA filter.

.3 Worker Protection Procedures

.1 Each worker shall remove street clothes and put on a respirator and disposable coveralls before proceeding to the work site.

.2 Before leaving the work area, a worker shall decontaminate the protective clothing, boots, and respirator by using a HEPA vacuum or damp wiping prior to removing it.

.3 Facilities for the washing of hands and face shall be made available and shall be used by every worker before leaving the work area. The outside of the respirator shall also be cleaned at this time.

.4 Following completion of the work, HEPA vacuum or wet wipe any material from the disposable coveralls and boots, remove the used disposable coverall and dispose of as contaminated waste. Clean the outside of the respirator with soap and water, remove the respirator, remove the filters, if applicable, and wet the outside surfaces, wash and rinse the inside of the respirator.

.4 Asbestos Removal (Glovebag Method)

.1 Before performing work:

.1 Prepare site by placing new 0.15 mm (6 mil) polyethylene plastic drop sheets on all surfaces immediately below and within 3.0 m of the work area.

.2 Remove all obstructions from around pipes to allow access for repair work.

.3 Inspect all glovebags for defects before using. A defective bag shall not be used.

.4 Ensure that any knife to be used inside the glovebag has a retractable blade and that any saw used inside the glovebag is of the flexible wire type; and brush used inside a glovebag shall not have metal bristles.

.2 Perform removal operations using the following procedures (in accordance to the manufacturer's instructions):

.1 Place any tools necessary to remove insulation in bottom of the containment bag.

.2 Install the bag on the pipe or fitting using shoulder straps and zipper provided. **Duct tape is not to be substituted for shoulder straps.** Support bag as necessary to avoid damage to the piping system or the bag itself.

.3 Insert nozzle of spray pump prefilled and primed with water and surfactant mixture (amended water) into the bag through the valve provided. Place hands in gloves and relocate the tools to the tool pouch.

.4 Cut or remove exterior insulation jacket, where applicable, to expose asbestos pipe covering. Wet exposed pipe covering with sufficient amended water to suppress any dust. Remove insulation and arrange in bottom of bag to obtain maximum capacity for the bag. Wash down exposed portion of pipe and top section of bag ensuring that insulation in lower portion of bag as well as any exposed end of insulation is thoroughly saturated. Use one hand and a cloth or sponge to aid in washing process.

.5 Ensure that pipe and other surfaces are clean of visual residue, dirt or dust prior to removal of the containment bag and seal all surfaces with encapsulant. Seal exposed ends of remaining asbestos insulation with encapsulant.

.6 If the glovebag is ripped, cut or opened in any way, work that may disturb friable material shall cease immediately. If the rip, cut or opening is small and easy to repair then the glovebag shall be repaired immediately with tape. Work may continue once the repairs are complete. If the rip, cut or opening is not small and cannot be easily repaired, place the glovebag immediately within a suitable asbestos waste container. Any spilled material containing asbestos shall be cleaned up and removed by using a vacuum equipped with a HEPA filter.

.7 To remove bag after completion of stripping, wash top section and tools thoroughly. Put all tools in one hand (glove), pull hand out inverted, twist to create a separate pouch, double tape to seal ends, cut and place in the next glovebag or into a water bucket, open pouch under water and clean and then allow to dry. Tools may also be cleaned and handed out during the dismantling of the bag while taking all precautions to prevent release of asbestos.

.8 Remove all air inside the glovebag by means of a vacuum equipped with a HEPA filter. Seal lower portion of bag and place bag into appropriate waste container.

.9 After removal of bag, ensure pipe is clean of all residue. If necessary after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA Filtered Vacuum equipment.

.10 Welds and folds of glovebags are to remain intact without modification to manufacturer's design.

.11 Glovebags, disposal bags, cloth rags and any porous materials are to be handled and disposed as hazardous waste.

.12 Frequently, and at regular intervals during the work and immediately upon completion of the work, glovebags containing asbestos-contaminated dust and waste shall be placed in a suitable waste container and shall be removed from the workplace.

.13 Immediately after removal of asbestos, clean all surfaces and equipment within the work area using a HEPA vacuum and damp wiping.

.14 Remove polyethylene floor covering, fold inward, and place in 6-mil polyethylene waste bags. Seal bags tightly.

.15 Place sponges, brushes, etc., in double polyethylene bags and seal tightly.

.16 Make arrangements for disposal of all asbestos-containing waste material.

3.3 TYPE 2 ENCLOSURE METHOD

.1 Preparation

.1 Separate the work area from the rest of the building using rope barriers, signage and other appropriate means. The extent of the work area will depend on the amount of work to be done, potential for fibre release and the height of the work above floor level.

.2 Identify the work area with clearly visible warning signs.

.3 Construct a frame for the enclosure from 50 mm x 100 mm (2" x 4") studs or other suitable material (scaffolding, for example); if the potential exists for the disturbance of asbestos-containing material during the construction of the enclosure, wear a respirator and suitable protective clothing; ensure that the enclosure is of adequate size to permit the storage of equipment and waste.

.4 If the room where the work is to take place is small, the room itself may serve as an enclosure, provided that all openings are sealed, the mechanical ventilation system servicing the room is disabled and the ventilation ducts to and from the work area are sealed.

.5 Shut off the source of heat for piping systems (i.e., boiler or steam line header), where possible.

.6 Cover the walls, floor and ceiling of the enclosure with clear 0.15 mm polyethylene sheeting sealed with duct tape. Curtains of polyethylene sheeting must be fitted on each side of the entrance to the enclosure (curtain flaps may require weights at the bottoms to ensure proper closing).

.7 Disable the ventilation system servicing the enclosure; seal ventilation ducts to and from the work area.

.8 Shut off and lock out electrical power within the enclosure.

.9 When specified, establish a measurable negative pressure differential in the work area enclosure by using fan/filter units equipped with High Efficiency Particulate Air (HEPA) filters. Units are to be integrity tested on site prior to commencement of asbestos removal operations and are to be exhausted directly outdoors where practicable.

.10 Wear an appropriate respirator approved for use with asbestos and suitable protective equipment. Only persons wearing protective clothing and equipment shall be allowed to enter the work area. If the type of asbestos is other than chrysotile, a powered air purifying respirator shall be used.

.11 Do not use compressed air.

.12 Do not eat, drink, smoke or chew in the work area.

.13 Vacuum surfaces of insulated material in the work area using a HEPA vacuum.

.2 Asbestos Removal and Cleanup

.1 Carefully cut the outer cover of thermal insulation on the section being worked on; thoroughly wet the asbestos-containing material with amended water using a garden sprayer.

.2 Remove wetted asbestos material and covering jackets in small sections directly into a waste receptor (polyethylene bag). **MAINTAIN ASBESTOS IN WET CONDITION AT ALL TIMES DURING REMOVAL AND/OR HANDLING. SEAL BAGS TIGHTLY.**

.3 For removal gypsum board with asbestos-containing joint compounds: Spray amended water on the gypsum board material to be removed to reduce dust. Remove gypsum board and immediately place into waste receptor. Double bag when removing debris from work area.

.4 For floor tile removal: disconnect all floor-mounted electrical fixtures and outlets and seal with duct tape. Seal other floor penetrations as required. Spray amended water

on tiles to be removed to reduce dust. Remove tiles and immediately place into waste receptor. Double bag when removing debris from work area.

.5 Clean surfaces exposed by asbestos removal with a brush and wet sponge. Ensure that all surfaces of piping and other equipment are clean of all residue.

.6 Immediately after removal of asbestos, clean all surfaces and equipment within the work area, including polyethylene sheeting, using a HEPA vacuum or by damp wiping.

.7 Seal all surfaces of pipe or other equipment, enclosure, and ends of exposed insulation with a suitable encapsulant.

.8 After satisfactory completion of cleaning and before leaving the work area, decontaminate protective clothing (including boots) and equipment, etc., using a HEPA vacuum or by damp wiping.

.9 Dismantle the enclosure and wet and dispose of all polyethylene sheeting, brushes and sponges as asbestos waste.

.10 Dispose of protective clothing as asbestos waste.

.11 Wash hands and face at the completion of the work (before leaving the work area); damp wipe the respirator and store in a proper place.

.12 Make arrangements for disposal of all asbestos-containing waste material.

3.4 TYPE 1 OPERATION

Not Applicable.

3.5 WASTE DISPOSAL

.1 Asbestos-containing wastes shall be disposed of in accordance with procedures established by the Ontario Ministry of the Environment *Regulation 347 (as amended) under the Environmental Protection Act* and the Government of Canada *Transportation of Dangerous Goods Regulations*.

.2 Both sides of every vehicle used for the transportation of asbestos and every waste container must display in large easily legible letters that contrast in colour with the background the word “CAUTION” in letters not less than 10 cm in height and the words:

CONTAINS ASBESTOS FIBRES
Avoid Creating Dust and Spillage
Asbestos May Be Harmful to Your Health
Wear Approved Protective Equipment

.3 Both sides of every waste container must display in large easily legible letters the words **‘ASBESTOS, WHITE, PRODUCT IDENTIFICATION NUMBER 2590’** or **‘ASBESTOS, BLUE, PRODUCT IDENTIFICATION NUMBER 2212’** in accordance with the type of asbestos being transported.

.4 Every vehicle used for the transportation of asbestos waste shall display a Class 9 placard on the front, back and two sides of the vehicle.

.5 The waste must be transported in a fully-enclosed truck, or alternatively, in a waste disposal skip. The driver must be familiar with cleanup and handling procedures and be trained to deal with spills or container breakage.

.6 The truck must be equipped with a shovel and broom, wetting agent, protective clothing, respiratory protective equipment, polyethylene bags of at least 0.15 mm (6 mil) thickness, and bag closures and duct tape.

.7 All waste must be transported with a **Bill of Lading** directly from the work area to the waste disposal site. The Bill of Lading is to indicate the source and type of asbestos, the Carrier, the amount, the destination (disposal site) and date all in accordance to applicable regulations. A copy of the Bill of Lading and disposal site receipt is to be provided to the Inspector.

3.6 AIR MONITORING

.1 Air tests will be taken at the discretion of the Asbestos Consultant using the Phase Contrast Microscopy (PCM) method from the time asbestos-containing materials may be disturbed until the final visual inspection of the work area(s). PCM will be used for final clearance air monitoring analysis.

.1 *Outside Asbestos Removal Work Areas:*

.1 The maximum allowable fibre concentration outside the Work Areas during asbestos removal or cleanup shall be 0.05 f/cc. Should readings exceed this value, the work shall stop at the discretion of the inspector and proceed only after the cause of the high fibre counts has been remedied.

.2 All costs associated with the cleaning, monitoring, and disruption caused by excessive fibre levels outside the Work Area and related to the work, are to be borne by the Asbestos Contractor including but not limited to:

.1 thorough cleaning with wet wiping and HEPA vacuuming by the Asbestos Contractor to the extent and satisfaction of the Inspector,

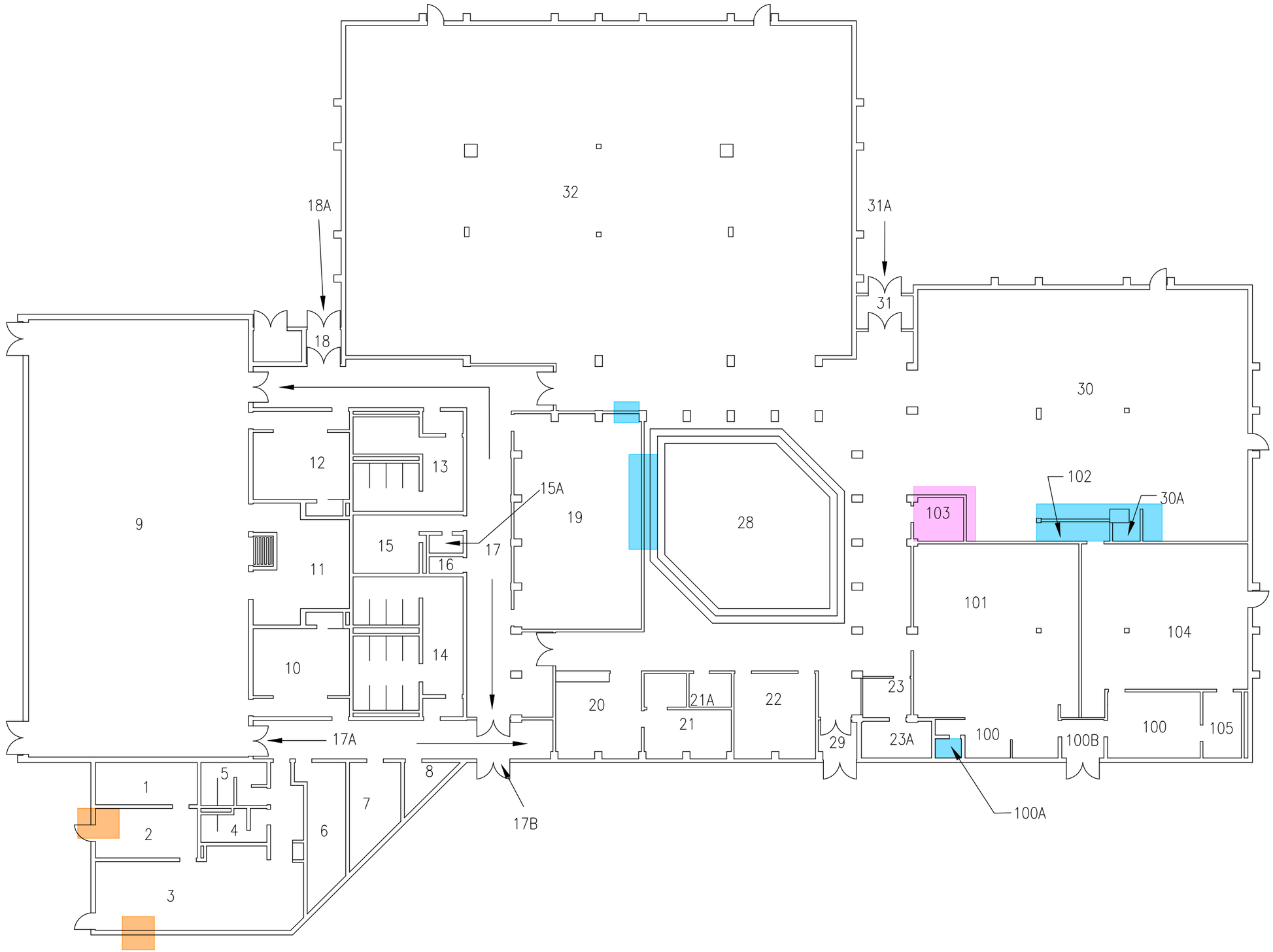
.2 all activities deemed necessary by the Inspector including area isolation, personnel relocation, additional visual inspections and air monitoring to confirm that the area has been adequately cleaned,

.3 disruption of plant production, office routine, and delays.

.2 *Final Clearance Test:*

Not Applicable.

END OF SECTION



LEGEND

1 FUNCTIONAL SPACE

WORK AREA 1

WORK AREA 2

WORK AREA 3

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATIONS OF WORK AREAS

JOSEPH GIBBONS PUBLIC SCHOOL
41 MOORE PARK CRESCENT, GEORGETOWN, ONTARIO

FIRST FLOOR PLAN

Drawn By: M.S	Approved By: J.D	Project No: 30065551
Date: JULY 2021	Scale: N.T.S	Drawing No: 30065551-1

ARCADIS Design & Consultancy for natural and built assets

HALTON DISTRICT SCHOOL BOARD

REVISED PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

JOSEPH GIBBONS PUBLIC SCHOOL

41 MOORE PARK CRESCENT, GEORGETOWN, ONTARIO

July 14, 2021

Project No. 30089627

Shubham Shringi, B.Eng.

Environmental Specialist

Jean Daigle

Project Manager – Senior Technical Specialist

REVISED PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

JOSEPH GIBBONS PUBLIC SCHOOL
41 Moore Park Crescent, Georgetown, Ontario

Prepared for:

Halton District School Board

J.W. Singleton Education Center

2050 Guelph Line, P.O. Box 2005

Burlington, ON L7R 3Z2

Attention: Rudy Hlacar

Prepared by:

Arcadis Canada Inc.

121 Granton Drive, Suite 12

Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

Our Ref.:

30065551

Date:

July 14, 2021

CONTENTS

TABLES

APPENDICES

1 INTRODUCTION

Arcadis Canada Inc. (Arcadis) was retained by the Halton District School Board to conduct a pre-renovation designated substances and hazardous materials survey in designated areas of Joseph Gibbons Public School located at 41 Moore Park Crescent in Georgetown, Ontario.

The information in this report is to be provided to all bidders on a project in accordance with the requirements of the *Occupational Health and Safety Act*.

The building is a one-storey masonry structure originally built in 1969.

It is our understanding that various interior renovations are being completed as part of the renovation work. The designated study areas are limited to areas affected and provided by the HDSB.

The designated study areas are shown on the floor plans provided in Appendix A.

The survey was undertaken to report on the presence or suspected presence of readily observable designated substances and hazardous materials.

1.1 Scope of Work

The scope of work for our investigation included:

- review of existing information;
- investigation of readily-accessible areas in the designated study areas for the presence of designated substances and hazardous materials used in building construction materials;
- obtaining representative bulk samples of materials suspected of containing asbestos and paint chip samples for lead;
- laboratory analyses of bulk samples for asbestos content;
- laboratory analyses of paint chip samples for lead content; and
- preparation of a report outlining the findings of the investigation.

Mr. Shubham Shringi of Arcadis visited the site on June 17, 2021 to conduct the designated substances and hazardous materials survey at Joseph Gibbons Public School.

2 REGULATORY DISCUSSION AND METHODOLOGY

Ontario Occupational Health and Safety Act (OHSA)

The Ontario *Occupational Health and Safety Act* (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)];
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)];
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]; and
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, Section 30 of the OHSA deals with the presence of designated substances on construction projects. Compliance with the OHSA and its regulations requires action to be taken where there is a designated substance hazard on a construction project.

Section 30 of the OHSA requires the owner of a project to determine if designated substances are present on a project and, if so, to inform all potential contractors as part of the bidding process. Contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project.

Regulation for Construction Projects, O.Reg. 213/91

The *Regulation for Construction Projects*, O.Reg. 213/91, applies to all construction projects. The following sections of the regulation would apply to situations where there is the potential for workers to be exposed to designated substances:

Section 14	(5)	A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.
Section 21	(1)	A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed.
	(2)	A worker's employer shall require the worker to comply with subsection (1).

(3) A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

Section 30 Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.

Section 46 (1) A project shall be adequately ventilated by natural or mechanical means,

(a) if a worker may be injured by inhaling a noxious...dust or fume;

(2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.

Section 59 If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

Regulation for Designated Substances (O.Reg. 490/09)

The *Designated Substance Regulation* (O.Reg. 490/09) specifies occupational exposure limits (OELs) for designated substances and requires an assessment and a control program to ensure compliance with these OELs.

Although, O.Reg. 490/09 and the OELs do not apply to an employer on a construction project, or to their workers at the project, employers still have a responsibility to protect the health of their workers and to comply with the OHSA and other applicable regulations. Section 25(2)(h) of the OHSA requires that employers take "every precaution reasonable in the circumstances for the protection of a worker".

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Ontario by Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste

(friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, *Waste Management – General*. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table C-1 in Appendix C, and specifies procedures to be followed in conducting asbestos abatement work.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* (SOR/2016-193) made pursuant to the Canada Consumer Product Safety Act states that a surface coating material must not contain more than 90 mg/kg total lead. Health Canada defines a lead-containing surface coating as a paint or similar material that dries to a solid film that contains over 90 mg/kg dry weight of lead.

Information from the United States Occupational Health and Safety Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the permissible exposure limit. Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children[(1)].

The *National Plumbing Code* allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

The Ministry of Labour *Guideline, Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been

(1) *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry.* WorkSafe BC, 2011.

used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour *Guideline, Silica on Construction Projects*, dated April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix C, Table C-3.

2.5 Vinyl Chloride

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building

construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 Acrylonitrile

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 Other Designated Substances

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. it has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 Polychlorinated Biphenyls (PCBs)

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by Ontario Regulation 362*, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must

be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in speciality industrial/institutional applications prior to the 1970s including government buildings and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations* (discussed below).

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act*, 1999 (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the Canada Gazette, Part II, and came into force on 1 January 2015. The most notable part of the amendments is the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment and Climate Change (MOECC) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOECC District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOECC, in accordance with O.Reg. 347, *General - Waste Management*. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs.

2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Ontario Regulation 463/10 – *Ozone Depleting Substances and Other Halocarbons*, applies to the use, handling and disposal of Class 1 ozone-depleting substances, including various chlorofluorocarbons (CFCs), halons and other halocarbons, Class 2 ozone-depleting substances, including various hydrochlorofluorocarbons (HCFCs) and halocarbons, and other halocarbons, including fluorocarbons (FCs) and hydrofluorocarbons (CFCs). The most significant requirements for handling of ozone-depleting substances (ODS) and other Halocarbons, which include, for example, refrigerants used in refrigeration equipment and chillers, include the following:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ODS and other halocarbons;
- the discharge of a Class 1 ODS or anything that contains a Class 1 ODS to the natural environment or within a building is prohibited;
- the making, use of, selling of or transferring of a Class 1 ODS is restricted to certain conditions;
- the discharge of a solvent or sterilant that contains a Class 2 ODS is prohibited;
- the making, use of, selling of or transferring of a solvent or sterilant that contains a Class 2 ODS is restricted to certain conditions;
- fire extinguishing equipment that contains a halon may be discharged to fight fires, except fires for firefighting training purposes;
- portable fire extinguishing equipment that contains a halon may be used or stored if the extinguisher was sold for use for the first time before 1 January 1996;
- records of the servicing and repair of equipment containing ODS and other halocarbons must be prepared and maintained by the owner of the equipment; and
- equipment no longer containing ODS and other halocarbons must be posted with a notice completed by a certified person.

Ontario Regulation 347, *General – Waste Management*, has also been amended to provide for more strict control of CFCs. The requirements under the amended regulation apply primarily to the keeping of records for the receipt or recycling of CFC waste.

2.10 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor

moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the Ontario *Occupational Health and Safety Act*, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

- *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association.
- *Mould Abatement Guidelines*. Environmental Abatement Council of Ontario. Edition 3. 2015.

3 RESULTS AND DISCUSSION

3.1 Asbestos

Arcadis reviewed a report prepared by Arcadis for the Halton District School Board entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 11, 2018 and *Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 29, 2021. Information and bulk sample analysis results obtained from this existing reports were utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigation, representative bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL Canada (EMSL) for asbestos analyses. Results of bulk sample analysis for asbestos content are provided in Table 3.1. Table 3.1 also include sample results obtained from existing reports and include results that are outside of the designated study areas, which are provided for references purposes only. Laboratory reports are provided in Appendix B. Locations of accessible asbestos-containing materials are shown on the floor plan provided in Appendix A.

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content

Joseph Gibbons Public School

Sample No.	Location	Description	Asbestos Content
1A	Room 19	Mastic below carpet	None Detected
1B	Room 28	Mastic below carpet	None Detected
1C	Room 22	Mastic below carpet	None Detected
2A	Room 23A	Mastic below 12”x12” vinyl floor tile, green with white fleck	**4% Chrysotile**
3A	Room 28a	12”x12” vinyl floor tile, grey with white fleck	None Detected (PLM) None Detected (TEM)
3B	Room 28a	12”x12” vinyl floor tile, grey with white fleck	None Detected
3C	Room 28a	12”x12” vinyl floor tile, grey with white fleck	None Detected
4A	Room 28a	Mastic below 12”x12” vinyl floor tile, grey with white fleck	None Detected
4B	Room 28a	Mastic below 12”x12” vinyl floor tile, grey with white fleck	None Detected
4C	Room 28a	Mastic below 12”x12” vinyl floor tile, grey with white fleck	None Detected
5A	Room 32	Black baseboard	None Detected (PLM) None Detected (TEM)
5B	Room 30	Black baseboard	None Detected
5C	Room 28	Black baseboard	None Detected
6A	Room 32	Mastic below black baseboard	None Detected
6B	Room 30	Mastic below black baseboard	None Detected

Sample No.	Location	Description	Asbestos Content
6C	Room 28	Mastic below black baseboard	None Detected
7A	Room 32	Mastic below new floor	None Detected
7A	Room 32	Mastic below new floor	None Detected
7B	Room 32	Mastic below new floor	None Detected
7C	Room 30	Mastic below new floor	None Detected
7C	Room 30	Mastic below new floor	None Detected
1A	22	Brown Caulking interior window frame	**1% chrysotile**(1)
2A	Adj gate 5	Brown Caulking exterior window frame	**1% chrysotile**(1)
3A	Adj gate 4	Beige Caulking exterior window frame	**2% chrysotile**(1)
1A	Room 4	Black mastic under 12”x12” vinyl floor tile	**2% chrysotile**(1,2)
2A	Room 4	3” Vinyl baseboard – brown composite sample (vinyl, adhesive)	None detected (PLM)(1) None detected (TEM)(1)
2B	Room 4	3” Vinyl baseboard – brown composite sample (vinyl, adhesive)	None detected (PLM)(1)
2C	Room 5	3” Vinyl baseboard – brown composite sample (vinyl, adhesive)	None detected (PLM)(1)
3A	Ext. wall of Room 32	Concrete block mortar	None detected (PLM)(1)
3B	Ext. wall of Room 30	Concrete block mortar	None detected (PLM)(1)
3C	Ext. wall of Room 105	Concrete block mortar	None detected (PLM)(1)
4A	Room 4	Concrete block mortar	None detected (PLM)(1)
4B	Room 5	Concrete block mortar	None detected (PLM)(1)
4C	Room 13	Concrete block mortar	None detected (PLM)(1)
5A	Room 4	Concrete block filler paint	None detected (PLM)(1)
5B	Room 4	Concrete block filler paint	None detected (PLM)(1)
5C	Room 5	Concrete block filler paint	None detected (PLM)(1)
6A	Room 13	Concrete block filler paint	None detected (PLM)(1)
6B	Room 13	Concrete block filler paint	None detected (PLM)(1)
6C	Room 14	Concrete block filler paint	None detected (PLM)(1)
7A	Room 13	Caulking at top of urinals -white/beige	None detected (PLM)(1)
7B	Room 13	Caulking at top of urinals -white/beige	None detected (PLM)(1)
7C	Room 13	Caulking at top of urinals -white/beige	None detected (PLM)(1)
8A	Room 13	1”x1” Brown floor and wall ceramic tile grout - white	None detected (PLM)(1)
8B	Room 13	1”x1” Brown floor and wall ceramic tile grout - white	None detected (PLM)(1)
8C	Room 13	1”x1” Brown floor and wall ceramic tile grout - white	None detected (PLM)(1)
9A	Room 13	1”x1” Brown floor and wall ceramic tile mortar bedding – white/grey	None detected (PLM)(1)

Sample No.	Location	Description	Asbestos Content
9B	Room 13	1”x1” Brown floor and wall ceramic tile mortar bedding – white/grey	None detected (PLM)[1]
9C	Room 13	1”x1” Brown floor and wall ceramic tile mortar bedding – white/grey	None detected (PLM)[1]
10A	Room 13	Epoxy flooring – sand mix coloured	None detected (PLM)[1]
10B	Room 13	Epoxy flooring – sand mix coloured	None detected (PLM)[1]
10C	Room 14	Epoxy flooring – sand mix coloured	None detected (PLM)[1]
11A	Room 4	Door caulking – dark brown	None detected (PLM)[1]
11B	Room 5	Door caulking – dark brown	None detected (PLM)[1]
11C	Room 13	Door caulking – dark brown	None detected (PLM)[1]
12A	Room 13	Texture coat on underside of sink - white	None detected (PLM)[1]
12B	Room 14	Texture coat on underside of sink - white	None detected (PLM)[1]
12C	Room 14	Texture coat on underside of sink - white	None detected (PLM)[1]
1A-JC-24	Room 24 (101, 104)	Drywall joint compound	None detected[1]
1B-JC-26	Room 26 (106)	Drywall joint compound	None detected[1]
1C-JC-28	Room 28	Drywall joint compound	None detected[1]
1D-JC-30	Room 30	Drywall joint compound	**1.1% chrysotile[1]**
2A-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, beige w/ brown streaks	None detected (PLM)[1] <0.25% chrysotile (TEM)[1,3]
2B-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, beige w/ brown streaks	None detected[1]
2C-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, beige w/ brown streaks	None detected[1]
2A-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, beige w/ brown streaks	None detected (PLM)[1] None detected (TEM)[1]
2B-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, beige w/ brown streaks	None detected[1]
2C-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, beige w/ brown streaks	None detected[1]
3A-CK-24	Room 24 (100)	Door caulking, interior, brown, soft	**4.2% chrysotile (PLM)[1]** **2.1% chrysotile (TEM)[1]**
4A-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, white w/ brown spots	None detected (PLM)[1] None detected (TEM)[1]
4B-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, white w/ brown spots	None detected[1]
4C-VFT-24	Room 24 (101, 104)	12” vinyl floor tile, white w/ brown spots	None detected[1]
4A-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, white w/ brown spots	None detected (TEM)[1]
4B-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, white w/ brown spots	None detected[1]

Sample No.	Location	Description	Asbestos Content
4C-MS-24	Room 24 (101, 104)	Mastic below vinyl floor tile, white w/ brown spots	None detected[(1)]
5A-CK-25	Room 25 (100B)	Door caulking, exterior, grey, soft	**2.3% chrysotile[(1)]**
6A-CK-24	Room 24 (101, 104)	Masonry wall joint caulking, white, soft	None detected (PLM)[(1)] None detected (TEM)[(1)]
6B-CK-24	Room 24 (101, 104)	Masonry wall joint caulking, white, soft	None detected[(1)]
6C-CK-24	Room 24 (101, 104)	Masonry wall joint caulking, white, soft	None detected[(1)]
8A-CK-26	Room 26 (106)	Caulking on exterior louvre	None detected (PLM)[(1)] None detected (TEM)[(1)]
8B-CK-26	Room 26 (106)	Caulking on exterior louvre	None detected[(1)]
8C-CK-26	Room 26 (106)	Caulking on exterior louvre	None detected[(1)]
7A-VFT-23A	Room 23A	12” vinyl floor tile – green with white streaks	**5.4% chrysotile[(1)]**
9A-PG-16	Room 16	Firestop – white cementitious	**2.6% chrysotile[(1)]**
10A-VFT-9	Room 9	12” vinyl floor tile – brown with white streaks	**4.5% chrysotile[(1)]**
11A-VFT-9	Room 9	12” vinyl floor tile – tan with brown light streaks	**3.3% chrysotile[(1)]**
12A-VFT-9	Room 9	Black accent vinyl floor tile strips	**10.8% chrysotile (TEM)[(1)]**
13A-VFT-3	Room 3	12” vinyl floor tile – peach with peach specks	None detected (TEM)[(1)]
13B-VFT-3	Room 3	12” vinyl floor tile – peach with peach specks	None detected[(1)]
13C-VFT-3	Room 3	12” vinyl floor tile – peach with peach specks	None detected[(1)]
V-1A	Room 24 (106)	Vermiculite insulation inside concrete block wall cavities	**Actinolite[(1)]**
JGPS#1	Room 2	Mechanical room – dom. Cold water meter insulation	**15% chrysotile[(1)]**
JGPS#2	Room 2	Mechanical room – dom. c.w.m. fitting insulation	**17% chrysotile[(1)]**
JGPS#3	Room 2	Mechanical room – hwh return pipe fitting insulation	**33% chrysotile[(1)]**
JGPS#4	Room 2	Mechanical room – hwh return pipe fitting insulation	**20% chrysotile[(1)]**
JGPS#5	Room 2	Mechanical room – hwh return pipe fitting insulation	**57% chrysotile[(1)]**
1A	Gym/ Room 9	Mastic - 12 x 12” vinyl floor tiles (brown with white specks)	**3% chrysotile [(2)(4)]**
2A	Gym/ Room 9	12 x 12” vinyl floor tiles (tan with brown streaks)	**1.7% chrysotile [(2)(4)]**
3A	Gym/ Room 9	Mastic - 12 x 12” vinyl floor tiles (tan with brown streaks)	**5% chrysotile [(2)(4)]**
4A	Gym/ Room 9	Mastic – brown in colour under baseboard (brown)	None Detected [(4)]
4B	Gym/ Room 9	Mastic – brown in colour under baseboard (brown)	None Detected [(4)]

Sample No.	Location	Description	Asbestos Content
4C	Gym/ Room 9	Mastic – brown in colour under baseboard (brown)	None Detected (4)
5A	Gym/ Room 9	Baseboard (brown)	None Detected (4)
5B	Gym/ Room 9	Baseboard (brown)	None Detected (4)
5C	Gym/ Room 9	Baseboard (brown)	None Detected (4)

NOTES:

(1) Sample results derived from a report prepared by Arcadis entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 29, 2021.

(2) Asbestos-containing materials collected in this area have since been removed. Results provided here are for reference purposes only.

(3) "Asbestos-containing material" is defined as material that contains 0.5% or more asbestos by dry weight.

(4) Sample results derived from a report prepared by Arcadis entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 11, 2018.

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

< = less than.

Chrysotile = Chrysotile asbestos.

Actinolite = Actinolite asbestos.

Determination of the locations of asbestos-containing material was made based on the review of existing information, results of bulk sample analysis, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Based on visual observations and results of laboratory analyses of samples collected by Arcadis Canada Inc., the following asbestos-containing materials were found to be present in the designated study areas:

- Vinyl floor tiles and floor tile mastic in Rooms 6, 7, 8, 10, 11, 12, 15, 15A, 16, 23A, 30A;
- Caulking on interior and exterior window frames and select exterior door frames throughout the designated study areas with the exception of newer windows in Rooms 100;
- Vermiculite insulation inside all exterior concrete block wall cavities throughout the designated study area;
- Joint compound applied to gypsum board on wall between Rooms 101 and 103;
- Joint compound applied to gypsum board on ceilings in Rooms 4, 5, 13 and 14;
- Joint compound applied to gypsum board on walls and ceilings in Rooms 15, 15A, 30A, 100A;
- Joint compound applied to gypsum board on walls in Rooms 17, 17A, 18, 19, 20, 21, 22, 23, 28, 29, 30, 31, 32, 101, 102 and 104 in the designated study areas;

- Asbestos cement board soffits outside Entrances 17B, 18A and 31A; and
- Thermal insulation applied to pipe fittings both above and below ceilings in various locations throughout the designated study areas.

Drywall partition wall between Room 101 and 104 was installed in 2012 and does not contain asbestos. All drywall applications in Room 105 were installed in 2012 and do not contain asbestos. Drywall partition walls (other than wall between Room 101 and 103) and drywall ceiling in Room 103 were installed in 2012 and do not contain asbestos.

Glass fibre insulation is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Vinyl floor tiles, floor tile mastic, caulking and cement board are non-friable materials. The removal, alteration and disturbance of this non-friable asbestos-containing material can be performed as a Type 1 operation as specified in O. Reg. 278/05 if the material is wetted and the work is done only using non-powered, hand-held tools (see Table C-1 in Appendix C). If the removal, alteration and/or disturbance work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters, then the work is classified as Type 2. If the power tools do not have HEPA filtered dust collecting devices, then the work is Type 3.

The removal, alteration or disturbance of less than one square metre of drywall in which asbestos-containing joint filling compounds have been used is classified as a Type 1 operation. The removal, alteration or disturbance of one square metre or more of drywall with asbestos-containing joint compounds is a Type 2 operation.

Vermiculite and thermal insulation are friable materials. The removal, alteration and disturbance of less than 1 m^2 of friable asbestos-containing materials is classified as a Type 2 enclosure operation as specified in O.Reg. 278/05. The removal, alteration and disturbance of more than 1 m^2 of friable asbestos-containing materials is classified as a Type 3 operation.

Asbestos may also be present in materials which were not sampled during the course of the asbestos designated substance survey carried out by Arcadis, including, but not limited to, areas outside the designated study areas, roofing materials, gaskets in piping, internal components of boilers, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), asphaltic pavement, etc., or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, above suspended gypsum board or plaster ceilings, and below carpets). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

If any materials which may contain asbestos and which were not tested during the course of the designated substances and hazardous materials survey are discovered during any construction activities, the work

shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined.

3.2 Lead

Arcadis reviewed a report entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 29, 2021. Information and bulk sample analysis results obtained from this existing report was utilized by Arcadis during the course of our investigation and in the preparation of this report.

Additional paint samples may be required to confirm lead content. Representative samples of paint were collected at the time of the survey based on, in part, the visual appearances of the paints (i.e., colours). Paints of similar colours may have been applied at different times and have varying amounts of lead.

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead Content
Joseph Gibbons Public School

Sample No.	Sample Location	Sample Description	Lead Content
P01	Room 22	Beige paint on concrete panel below window	**3,000 mg/Kg**(1)
P02	Room 32	Blue paint on block wall	**900 mg/Kg**(1)
P1	Room 13	Paint from concrete block – beige coloured	<90 mg/Kg (1)
P2	Room 14	Paint from drywall ceiling – beige/white coloured	**8,700 mg/Kg (1)**
P3	Room 13	Paint from metal radiator cover – beige coloured	**510 mg/Kg (1)**

NOTE:

(1) Sample results derived from a report prepared by Arcadis *entitled Pre-Renovation Designated Substances and Hazardous Materials Survey, Joseph Gibbons Public School, 41 Moore Park Crescent, Georgetown, Ontario* dated April 29, 2021.

< = less than.

mg/Kg = milligrams lead per kilogram paint.

1 mg/Kg = 1 part per million (ppm).

Lead was detected at a level above the criteria of 90 mg/kg (Surface Coating Materials Regulations criterion value) in all the paint samples collected, with the exception of the beige paint collected on the concrete block wall.

Lead may also be present in lead pipe, mortar, glazing on ceramic tiles, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings.

The Ministry of Labour *Guideline – Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne

concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

In addition, the *EACO Lead Abatement Guidelines*, *2014 — Edition 1,* Environmental Abatement Council of Ontario, also provides guidance and recommended work practices.

3.3 Mercury

During the course of our site investigation, fluorescent lights were observed in the designated study areas. Mercury should be assumed to be present as a gas in all fluorescent light tubes and in all paint applications, albeit at low levels. The fluorescent light tubes should be recycled for mercury, if the lights are removed. Mercury-containing thermostats were observed at various locations in the designated study area.

Proper procedures for removing mercury-containing equipment (thermostats, for example, and any other mercury-containing equipment found to be present at the time of renovations or demolition) typically involve:

- removal of the mercury-containing equipment in a manner designed to prevent breakage;
- removal of the equipment over or in a containment device sufficient to collect and contain any mercury released in case of breakage;
- ensuring that a mercury clean-up system is readily available to immediately transfer any mercury resulting from spills or leaks from broken equipment and that any mercury resulting from spills or leaks is immediately transferred to an appropriate container;
- ensuring that the area in which equipment is removed is well ventilated;
- ensuring that employees removing equipment are thoroughly familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate containers;
- storing removed switches in closed, non-leaking containers that are in good condition; and
- packing removed switches in the container with packing materials adequate to prevent breakage during storage, handling and transportation.

Proper procedures for removing and handling mercury-containing fluorescent light tubes typically involve:

- ensuring that electrical power to light fixtures has been disconnected and locked out;
- taking all necessary precautions to ensure that fluorescent lamp tubes are removed in a manner that prevents breakage; and

- transporting fluorescent lamp tubes to a licensed processing location for separation and recovery of mercury.

The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any mercury in paint.

3.4 Silica

Materials observed in the designated study areas which should be considered to contain silica included gypsum board, drywall joint compound, concrete, mortar, concrete block and cement products.

The Ministry of Labour *Guideline, Silica on Construction Projects*, April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of silica, as shown in Appendix C, Table C-3.

Additional precautionary measures should also be implemented for certain types of materials (e.g., plaster and texture coat materials, including non-asbestos applications, concrete block, etc.). For minor disturbances such as drilling, a HEPA-filtered attachment should be used. For removal of more than a minor amount of material, enclosures should be constructed for dust control and separation of the work area from adjacent areas.

3.5 Vinyl Chloride

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products.

3.6 Acrylonitrile

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of combustion of ABS products.

3.7 Other Designated Substances

No other designated substances (benzene, isocyanates, arsenic, ethylene oxide and coke oven emissions) were observed to be present in the designated study areas, and none would be expected to be encountered in any building materials in a form that would represent an exposure concern. Arsenic may be present at low levels in paint applications. The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any arsenic (or mercury) in paint.

3.8 Polychlorinated Biphenyls (PCBs)

Fluorescent lights were observed in the designated study areas during the course of our site investigations. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed in the designated study areas, are usually an electronic type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling of the lights.

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

No equipment potentially containing ODS was observed during the course of the site investigation.

3.10 Mould

The investigation for mould included a visual inspection of readily-accessible surfaces throughout the designated study areas to determine if any mould was evident. The inspection of mould did not include intrusive inspections of wall cavities. Readily evident suspect mould was not observed in the designated study areas during the course of the site investigation. During renovations or interior demolition work, any mould-impacted materials uncovered/discovered should be remediated following the measures and procedures outlined in the *Canadian Construction Association Standard Construction Document CCA-82 2004 - Mould Guidelines for the Canadian Construction Industry*.

4 USE AND LIMITATIONS OF THIS PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

This report, prepared for Halton District School Board does not provide certification or warranty, expressed or implied, that the investigation conducted by Arcadis Canada Inc. identified all designated substances (as defined in the Ontario *Occupational Health and Safety Act*) in designated study areas at the subject facility. The work undertaken by Arcadis Canada Inc. was directed to provide information on the presence of designated substances in building construction materials based on review of existing information, visual investigation of readily accessible areas in the designated study areas of the building and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content and laboratory analysis of a limited number of paint samples for lead content. The survey did not include for identification of asbestos in process materials, equipment (including electrical equipment and wiring), furniture (e.g., chairs, table tops, etc.), nor material outside of the building (e.g., asphaltic pavement).

The material in this report reflects Arcadis Canada Inc.'s best judgment in light of the information available at the time of the investigation, which was performed on June 17, 2021.

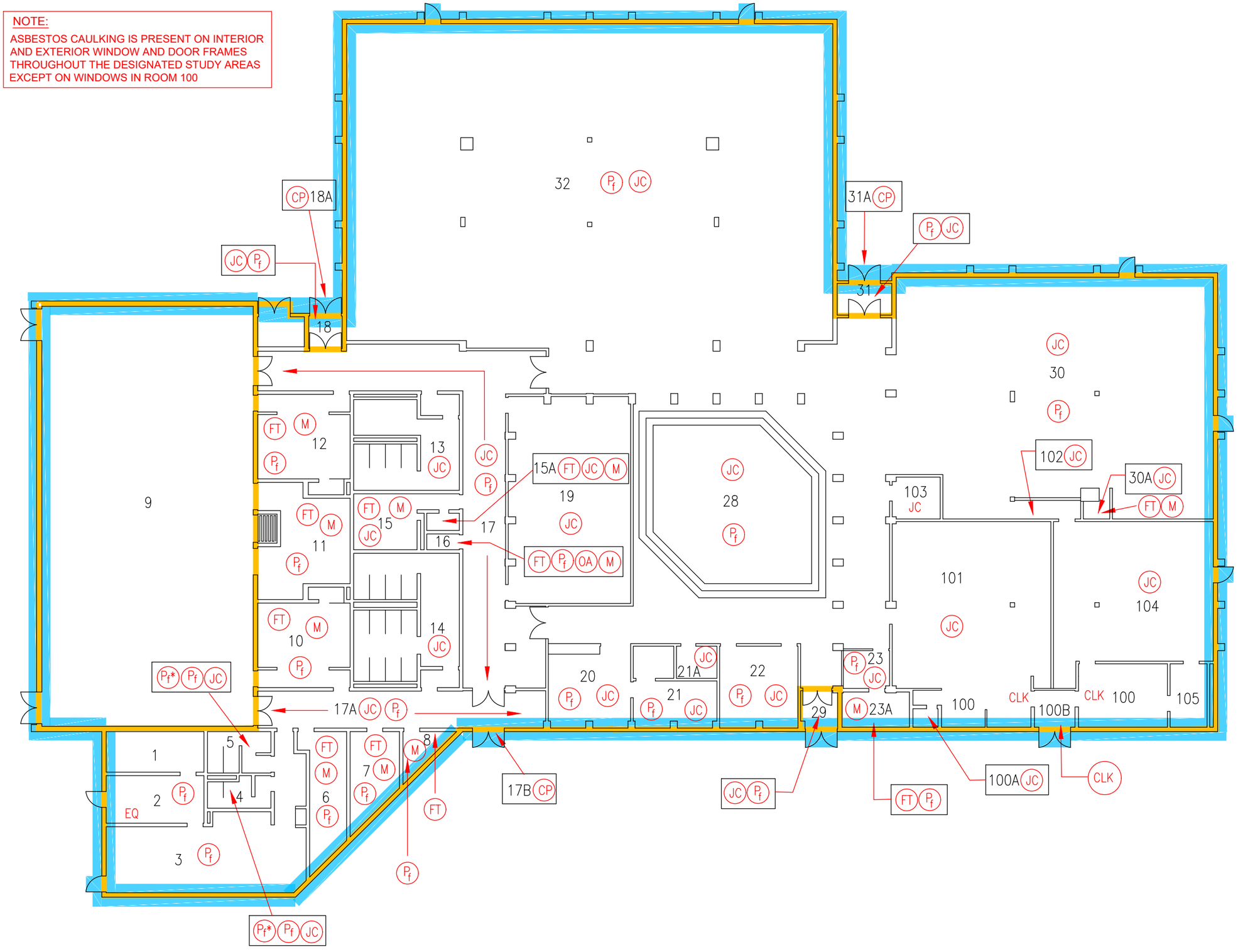
This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

This report was prepared by Arcadis Canada Inc. for Halton District School Board. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

APPENDIX A

Floor Plans

NOTE:
ASBESTOS CAULKING IS PRESENT ON INTERIOR AND EXTERIOR WINDOW AND DOOR FRAMES THROUGHOUT THE DESIGNATED STUDY AREAS EXCEPT ON WINDOWS IN ROOM 100



LEGEND

1	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILIING ASSEMBLY
P_f	ASBESTOS ON PIPE FITTINGS ONLY
EQ	ASBESTOS ON MECHANICAL EQUIPMENT
CLK	ASBESTOS CAULKING
JC	ASBESTOS DRYWALL JOINT COMPOUND
FT	ASBESTOS FLOOR TILE
CP	ASBESTOS CEMENT PRODUCT
OA	OTHER ASBESTOS MATERIAL
M	ASBESTOS MASTIC
	ASBESTOS VERMICULITE INSIDE CONCRETE BLOCK WALL CAVITIES
	STUDY AREA

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:
1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

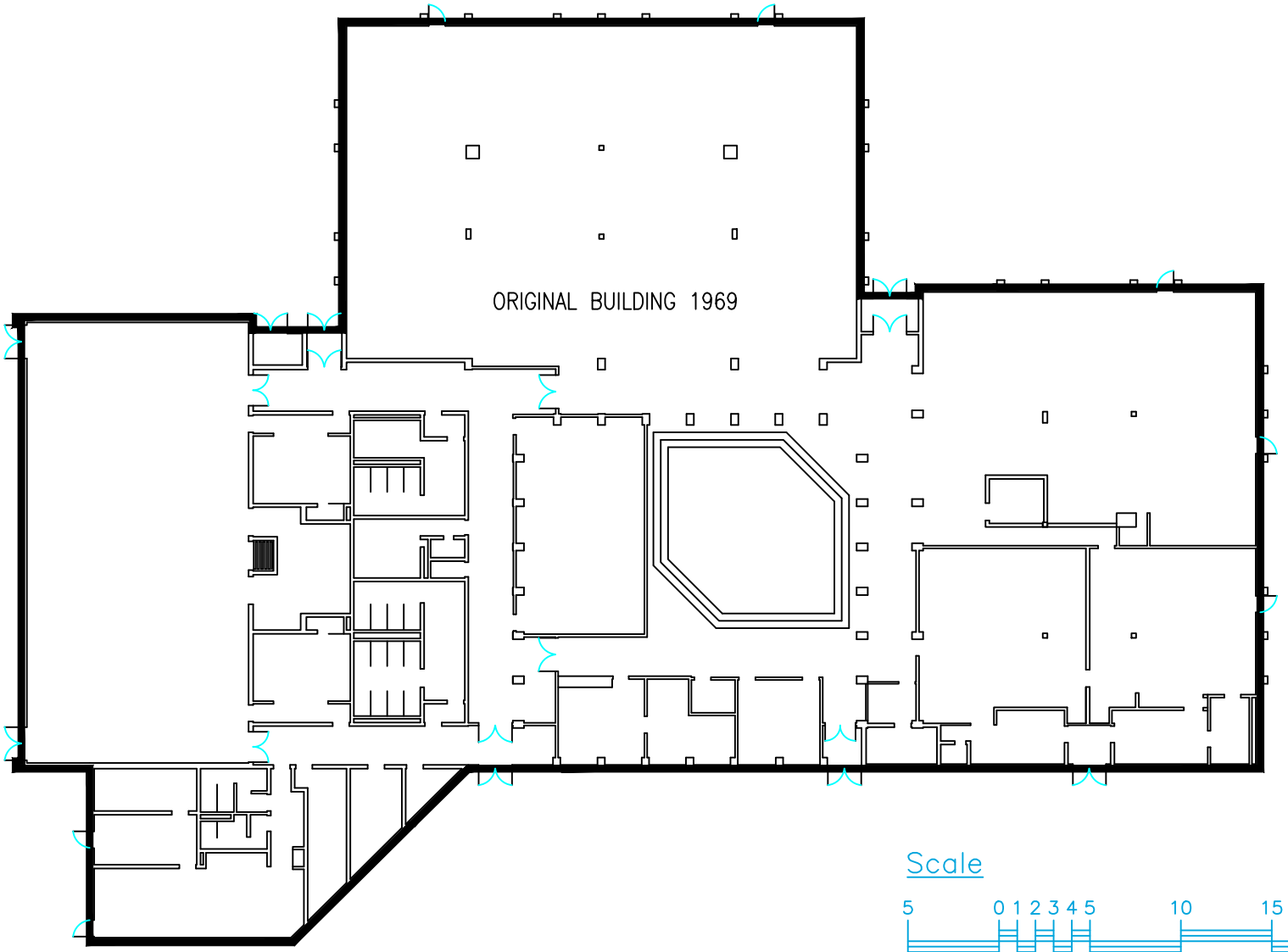
REVISED PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF STUDY AREAS AND ASBESTOS CONTAINING MATERIALS

JOSEPH GIBBONS PUBLIC SCHOOL
41 MOORE PARK CRESCENT,
GEORGETOWN, ONTARIO

FIRST FLOOR PLAN

Drawn By: M.S	Approved By: J.D	Project No: 30065551	
Date: JULY 2021	Scale: N.T.S	Drawing No: 30065551-1	



Scale

5 0 1 2 3 4 5 10 15 20

METRES

5 0 3 10 20 30 40 50

FEET

Joseph Gibbons Public School

41 MOORE PARK CRESCENT
GEORGETOWN, ONTARIO

LAST REVISED	30 JAN 2014
PREVIOUS UPDATE	31 JULY 2012
DRAWER	JK--5
SCALE	(TO FIT) 1"=40'-0"
DRAWN	RDZ
PRINTED LAST UPDATED	20 OCT 2011
YEAR BUILT	1969
AREA SQ. FT.	25268 (2347m²)
CAD FILE NAME	JOSPS

FIRST FLOOR PLAN

PROJECT NAME

AREA

DRAWING B | NUMBER 2

APPENDIX B

Laboratory Reports

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552109816
Customer ID: 55DCSL97
Customer PO: 30065551
Project ID:

Attn: Shubham Shringi
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 6/18/2021
Analyzed: 6/21/2021

Proj: Joseph Gibbons Public School 30065551

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A **Lab Sample ID:** 552109816-0001
Sample Description: Mastic below carpet, Room 19

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** 552109816-0002
Sample Description: Mastic below carpet, Room 28

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 552109816-0003
Sample Description: Mastic below carpet, Room 22

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 552109816-0004
Sample Description: Mastic below 12x12 vinyl floor tile, green w white fleck, Room 23A

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/Black	0.0%	96.0%	**4% Chrysotile**	

Client Sample ID: 2B **Lab Sample ID:** 552109816-0005
Sample Description: Mastic below 12x12 vinyl floor tile, green w white fleck, Room 10

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 2C **Lab Sample ID:** 552109816-0006
Sample Description: Mastic below 12x12 vinyl floor tile, green w white fleck, Room 6

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 3A **Lab Sample ID:** 552109816-0007
Sample Description: 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	6/21/2021	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	6/21/2021	Gray	0.0%	100.0%	None Detected	

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Customer ID: 55DCSL97
Customer PO: 30065551
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 3B **Lab Sample ID:** **552109816-0008**

Sample Description: 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** **552109816-0009**

Sample Description: 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4A **Lab Sample ID:** **552109816-0010**

Sample Description: Mastic below 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** **552109816-0011**

Sample Description: Mastic below 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** **552109816-0012**

Sample Description: Mastic below 12x12 vinyl floor tile, grey w white fleck, corridor

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5A **Lab Sample ID:** **552109816-0013**

Sample Description: Black baseboard, Room 32 - baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	6/21/2021	Black	0.0%	100%	None Detected	
TEM Grav. Reduction	6/21/2021	Black	0.0%	100.0%	None Detected	

Client Sample ID: 5B **Lab Sample ID:** **552109816-0014**

Sample Description: Black baseboard, Room 30

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Black	0.0%	100.0%	None Detected	

Client Sample ID: 5C **Lab Sample ID:** **552109816-0015**

Sample Description: Black baseboard, Room 28

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Black	0.0%	100.0%	None Detected	

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Customer PO: 30065551
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 6A **Lab Sample ID:** **552109816-0016**
Sample Description: Mastic below black baseboard, Room 32

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 6B **Lab Sample ID:** **552109816-0017**
Sample Description: Mastic below black baseboard, Room 30

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 6C **Lab Sample ID:** **552109816-0018**
Sample Description: Mastic below black baseboard, Room 28

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 7A-White Mastic **Lab Sample ID:** **552109816-0019**
Sample Description: Mastic below new floor, Room 32

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 7A-Yellow Mastic **Lab Sample ID:** **552109816-0019A**
Sample Description: Mastic below new floor, Room 32

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 7B **Lab Sample ID:** **552109816-0020**
Sample Description: Mastic below new floor, Room 32

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Gray/Black/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 7C-Yellow Mastic **Lab Sample ID:** **552109816-0021**
Sample Description: Mastic below new floor, Room 30

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 7C-Black Mastic **Lab Sample ID:** **552109816-0021A**
Sample Description: Mastic below new floor, Room 30

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/21/2021	Black	0.0%	100.0%	None Detected	

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EMSL Canada Order 552109816
Customer ID: 55DCSL97
Customer PO: 30065551
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Analyst(s):

Ioana Taina	PLM (5)
Natalie D'Amico	TEM Grav. Reduction (2)
Tiffany Pilon	PLM (14) PLM Grav. Reduction (2)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. Estimation of uncertainty available upon request. This report is a summary of multiple methods of analysis, fully compliant reports are available upon request. A combination of PLM and TEM analysis may be necessary to ensure consistently reliable detection of asbestos. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 06/21/202112:53:14

APPENDIX C

Summary of Asbestos, Lead and Silica Work Classifications

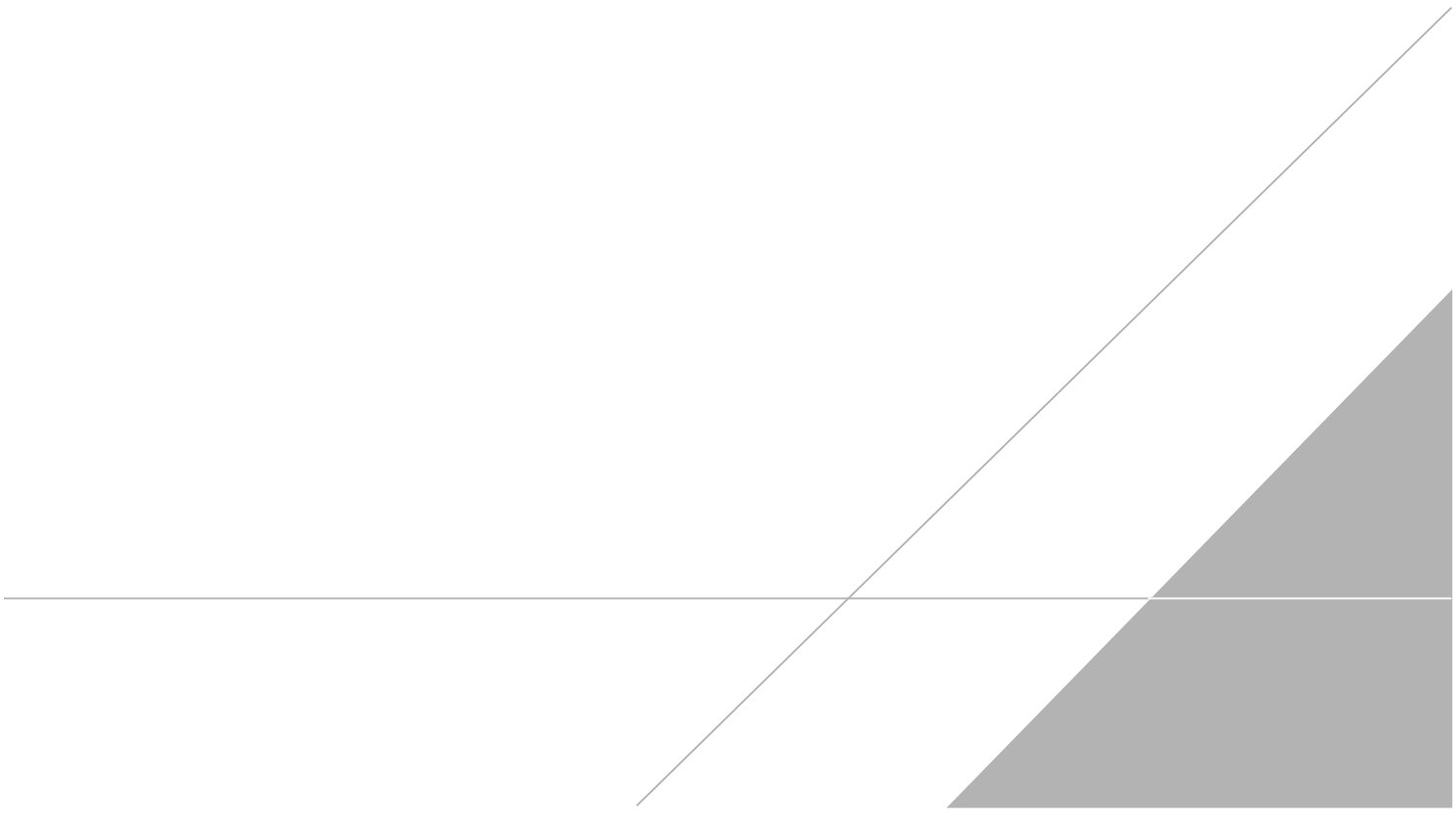

TABLE C-1
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m^2 asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m^2 of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- 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;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m^2 or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m^3	>0.05 to 0.50 mg/m^3	>0.50 to 1.25 mg/m^3	>1.25 to 2.50 mg/m^3	>2.50 mg/m^3

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbit or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3

SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS

MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m^3	>0.50 to 2.50 mg/m^3	>2.5 mg/m^3
Quartz and Tripoli	>0.10 to 1.0 mg/m^3	>1.0 to 5.0 mg/m^3	>5.0 mg/m^3

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
- Abrasive blasting of a material that contains ≥ 1 per cent silica.

Arcadis Canada Inc.

121 Granton Drive, Suite 12, Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

www.arcadis.com