Halton District School Board **Addendum No. 3**

RFT 22-107 HVAC & Ventilation Upgrades - Rolling Meadows PS

The following, issued by the Halton District School Board April 27, 2022, shall be incorporated in the specifications and shall form part of the proposal document for the above.

ATTACHED:

- Asbestos Abatement Specifications – Rolling Meadows Public School (29 pages)
- Revised Pre-Renovation Designated Substances and Hazardous Materials Survey – Rolling Meadows (53 pages)

REVISED:

Bidders must submit their Submission **via email** on or before 2:00 p.m., Eastern Daylight Time on **May 3, 2022** (the "Closing Time") to the following address:

chatelaina@hdsb.ca
Attention: Amanda Chatelain

Submissions will be deemed to be officially received by the time stamp issued by the HDSB's email server. Submissions received after the official closing time will be declared non-compliant and shall not be considered during the selection process. Electronic submission shall be no larger than 25MB. Proponents are responsible for confirming that their submission has been successfully received

RECEIPT OF ADDENDA MUST BE ACKNOWLEDGED ON THE FORM OF TENDER.

PAGE 1 OF 83
END OF ADDENDUM 3

ASBESTOS ABATEMENT SPECIFICATIONS
ROLLING MEADOWS PUBLIC SCHOOL

TABLE OF CONTENTS

1.0 PART 1 – GENERAL 2
1.1 General 2
1.2 Asbestos Abatement Outline of Work 2
1.3 General Requirements 3
1.4 Definitions 5
1.5 Regulatory Agencies 7
1.6 Fire Safety Plan 7
1.7 Submittals 8
1.7.1 Submittals Before Commencing Work 8
1.7.2 Submittals Before Commencing Asbestos Removal 10
1.7.3 Submittals Upon Completion of Work 11
1.8 Existing Conditions 11
1.9 Restrictions 11
1.10 Worker Protection 11
1.11 Notifications 13
1.12 Protection, Repair and Replacement of Equipment and Materials 13
1.13 Confined Spaces 13
2.0 PART 2 – PRODUCTS 15
2.1 Materials 15
2.2 Equipment 15
3.0 PART 3 – EXECUTION 18
3.1 Major Asbestos Work (Type 3 Operations) 18
3.2 Asbestos Removal (Glovebag Method) 18
3.3 Type 2 Enclosure Method 19
3.4 Type 2 Non-Enclosure Method 22
3.5 Type 1 Operation 24
3.6 Waste Disposal 26
3.7 Air Monitoring 27

At Rear:

Drawing No. 30065539-1 - 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 ASBESTOS ABATEMENT 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 and Mechanical Drawings for additional details

.5 All mechanical, electrical, communication and life system isolations and disconnects required to facilitate asbestos removal operations, will be performed by the General Contractor's sub trades prior commencement of remedial work.

.6 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.

.7 **Work Area 1 – Room 117**

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

.2 Using hand tools, remove and dispose as asbestos waste, select sections of asbestos-containing vinyl floor tiles located on the raised wood platform. The General Contractor will clearly identify all areas of vinyl floor tile removals.

.3 For costing purposes allow for the removal of approximately five (6) square metres of vinyl floor tiles.

.8 **Work Area 2 – To be Determined**

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

.2 Remove and dispose, as asbestos waste, accessible asbestos-containing thermal insulation from select pipe fittings 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 two workers over a 10-hour shift (including travel time) to perform twelve glovebag removal operations of less than one square metre of asbestos thermal insulation per glovebag location per mobilization. Allow for two (2) separate mobilizations.

.9 **Work Area 3 – To be Determined**

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

.3 During the rebuild phase, assist the General Contractor's sub trades in attaching items to asbestos-containing vinyl floor tiles and/or associated asbestos-containing vinyl floor tile mastic mastic.

.4 Using Type 2 Non-Enclosure asbestos removal procedures and using hand tools and/or power tools attached to dust collecting devices equipped with HEPA filters, mechanically fasten items supplied by the General Contractor to asbestos-containing vinyl floor tiles and/or associated asbestos-containing vinyl floor tile mastic. 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 tools, materials, disposal, expenses and labour costs (two workers over a 10-hour shift during regular business hours including travel time) per mobilization. Allow for one (1) separate mobilization.

.10 Vinyl floor tiles contain 1% to 6.1% chrysotile asbestos. Thermal insulation on pipe fittings contains 21% to 57% chrysotile asbestos.

.11 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.

.12 **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 Arcadis Canada Inc. 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 all electrical connects and disconnects. All work must be performed by a licensed electrician in compliance to all regulatory requirements and codes.

.3 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.

.4 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 Arcadis Canada Inc. Consultant shall be advised in writing at least four days in advance of the proposed working hours.

.5 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.

.6 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.

.7 All work in work areas that are confined spaces shall comply with all requirements respecting confined spaces specified in O. Reg. 632/05, as amended 346/15, November 26, 2015.

.8 **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.

.9 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.

.10 The Arcadis Canada Inc. 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.

.11 The Arcadis Canada Inc. 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 Arcadis Canada Inc. Consultant.

.12 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, Arcadis Canada Inc. 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 Arcadis Canada Inc. 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.

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

.14 The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following and shall name the Owner, the Architect, the General Contractor 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.

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

.16 The supervisor shall be replaced, at the written request of the Arcadis Canada Inc. Consultant, if found to be incompetent or inattentive to the needs of the project.

.17 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 Arcadis Canada Inc. 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. 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 Canada Inc., 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, as amended 62/18, March 2, 2018 – made under the *Occupational Health and Safety Act, R.S.O. 1990, c. E. 19, as amended.*

.2 Ontario Ministry of the Environment *Regulation 347* under the Environmental Protection Act, 19 as amended by O. Reg. 509/21, June 30, 2021.

.2 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.)

.3 Government of Ontario *Occupational Health and Safety Act, -R.S.O. 1990, c. E. 19, as amended, and Regulations for Construction Projects* O. Reg. 213/91, as amended.

.4 Office of the Fire Commissioner of Canada.

.5 Ontario Electrical Safety Code.

.6 Government of Ontario, Building Code O. Reg. 332/12, as amended 137/19, May 2, 2019.

.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 firefighting procedures;

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

.4 maintenance of firefighting 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 *Safety Data Sheets:*

.1 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, the Architect, the General Contractor 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 Vinyl floor tiles contain 1% to 6.1% chrysotile asbestos. Vinyl floor tile mastic contains 0.65% to 5% chrysotile asbestos. Thermal insulation on pipe fittings contains 21% to 57% chrysotile asbestos.

.2 Existing conditions are documented in a report prepared by Arcadis Canada Inc. for the Halton District School Board titled Revised Pre-Renovation Designated Substances and Hazardous Materials Survey, Rolling Meadows Public School, 1522 Mountain Grove Avenue, Burlington, Ontario" dated April 6, 2022, which is included with the tender documents.

.3 Masonry applications may contain silica. Paint applications contain lead and may contain 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 Arcadis Canada Inc. 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 Arcadis Canada Inc. 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 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 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.

.10 Do not use compressed air.

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

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

.2 Asbestos Removal and Cleanup

.1 Only non-powered hand-tools, or power tools **FITTED WITH A DUST COLLECTION DEVICE AND HEPA FILTER** are permitted to be used.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Thermal insulation:* (piping and equipment) Ensure that heat sources to all piping systems, tanks, etc., have been shut off before work commences. Carefully cut open the outer cover of thermal insulation while spraying a mist of amended water on the section being worked on; thoroughly soak the underlying asbestos-containing material with amended water, using airless spray equipment. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.4 *Sprayed-on Materials (Texture Coat and Fireproofing):* Apply amended water to the surface of the material using an airless sprayer. Allow the water to soak through to the surface. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. The thickness and the nature of the asbestos containing material will dictate the time required to soak and number of passes necessary.

.5 *Troweled-on Materials* (Plaster): Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove plaster material by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.6 *Vinyl Sheet Flooring (with asbestos-containing paper backing):* Apply amended water to the surface of the material using an airless sprayer. Allow the water to soak through to the surface. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. The thickness and the nature of the asbestos containing material will dictate the time required to soak and number of passes necessary.

.7 *Drywall with Asbestos-Containing Joint Compound*: Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners.

.8 Ceiling Tiles: Remove tiles by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the all T-bar and J-moulding.

.9 Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed, pack the material into a waste receptor (polyethylene bag).

.1 Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Mist the air periodically with water.

.3 Excess water is to be treated as asbestos waste and is to be placed into a waste receptor (polyethylene bag). Refer to Waste Handling for cleaning and removal of bagged asbestos waste.

.10 After completion of asbestos removal, all surfaces from which asbestos has been removed shall be brushed and wet-sponged to remove all visible material and residues. During this Work the surfaces shall be kept wet.

.11 Clean all surfaces and equipment within the work area, including polyethylene sheeting, using a HEPA vacuum or by damp wiping.

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

.13 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.

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

.15 Dispose of protective clothing as asbestos waste.

.16 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.

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

3.4 TYPE 2 NON-ENCLOSURE METHOD

.1 Preparation

.1 Control the spread of dust from the work being performed by use of drop sheets, keeping doors closed, providing signage, etc. Ensure that appropriate equipment and materials are at hand.

.2 Restrict access to the work area using rope barriers, barricades, and other appropriate measures.

.3 Disable ventilation systems servicing the work area.

.4 Provide and wear a non-powered air purifying respirator with high efficiency cartridges approved for use with asbestos and disposable coveralls including hood, elasticized cuffs and zipper over work clothes.

.2 Asbestos Removal and Cleanup

.1 Only non-powered hand-tools, or power tools **FITTED WITH A DUST COLLECTION DEVICE AND HEPA FILTER** are permitted to be used.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Vinyl Floor Tile/Vinyl Floor Sheeting (without asbestos-containing paper backing)*: 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.

.4 *Exterior Cement Board*: Place polyethylene sheet over ground to prevent soil contamination. Apply amended water as required to reduce dust. Remove material by hand with minimal breakage and place immediately into waste receptor. Do not throw or allow the asbestos waste to fall to the ground from the work area. Ensure that all asbestos debris is removed including that on fasteners, embedded in caulking, etc.

.5 *Drywall with Asbestos-Containing Joint Compound*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping. Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Double bag when removing debris from work area.

.6 *Ceiling Tiles*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove tiles by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the all T-bar and J-moulding. Double bag when removing debris from work area.

.7 *Caulking*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.8 *Mastic*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.9 Do not allow waste to accumulate.

.10 Clean dust and debris at regular intervals and at the end of each shift with a damp cloth or HEPA vacuum.

.11 Ensure that there is no visible airborne dust in the work area during the removal and cleanup operation.

.12 All duct tape, polyethylene sheets, disposable clothing and other consumables used for, and during the removal of asbestos shall be contained and disposed as asbestos waste.

.13 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.

.14 Dispose of protective clothing as asbestos waste.

.15 Wash hands and face prior to taking breaks and at completion of the work before leaving the work area. Damp-wipe the respirator after use and store in an appropriate place.

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

3.5 TYPE 1 OPERATION

.1 *Preparation*

.1 Control the spread of dust from the work being performed by use of drop sheets, keeping doors closed, providing signage, etc. Ensure that appropriate equipment and materials are at hand.

.2 Restrict access to the work area using rope barriers, barricades, and other appropriate measures.

.3 Disable ventilation systems servicing the work area.

.4 Provide and wear a non-powered air purifying respirator with high efficiency cartridges approved for use with asbestos and disposable coveralls including hood, elasticized cuffs and zipper over work clothes.

.2 *Asbestos Removal and Cleanup*

.1 Do not use any power tools. All work is to be completed by non-powered hand tools only.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Vinyl Floor Tile/Vinyl Floor Sheeting (without asbestos-containing paper backing)*: 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.

.4 *Exterior Cement Board*: Place polyethylene sheet over ground to prevent soil contamination. Apply amended water as required to reduce dust. Remove material by hand with minimal breakage and place immediately into waste receptor. Do not throw or allow the asbestos waste to fall to the ground from the work area. Ensure that all asbestos debris is removed including that on fasteners, embedded in caulking, etc.

.5 *Drywall with Asbestos-Containing Joint Compound*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping. Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Double bag when removing debris from work area.

.6 *Ceiling Tiles*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove tiles by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the all T-bar and J-moulding. Double bag when removing debris from work area.

.7 *Caulking*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.8 *Mastic*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.9 Do not allow waste to accumulate.

.10 Clean dust and debris at regular intervals and at the end of each shift with a damp cloth or HEPA vacuum.

.11 Ensure that there is no visible airborne dust in the work area during the removal and cleanup operation.

.12 All duct tape, polyethylene sheets, disposable clothing and other consumables used for, and during the removal of asbestos shall be contained and disposed as asbestos waste.

.13 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.

.14 Dispose of protective clothing (where applicable) as asbestos waste.

.15 Wash hands and face prior to taking breaks and at completion of the work before leaving the work area. Damp-wipe the respirator (where appliable) after use and store in an appropriate place.

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

3.6 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 All waste is to be removed from the site and disposed. Disposal containers are not to be left on the property unattended unless fully enclosed and locked. Bins must be removed immediately on completion of work.

.3 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

.4 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.

.5 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.

.6 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.

.7 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.

.8 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.

3.7 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,

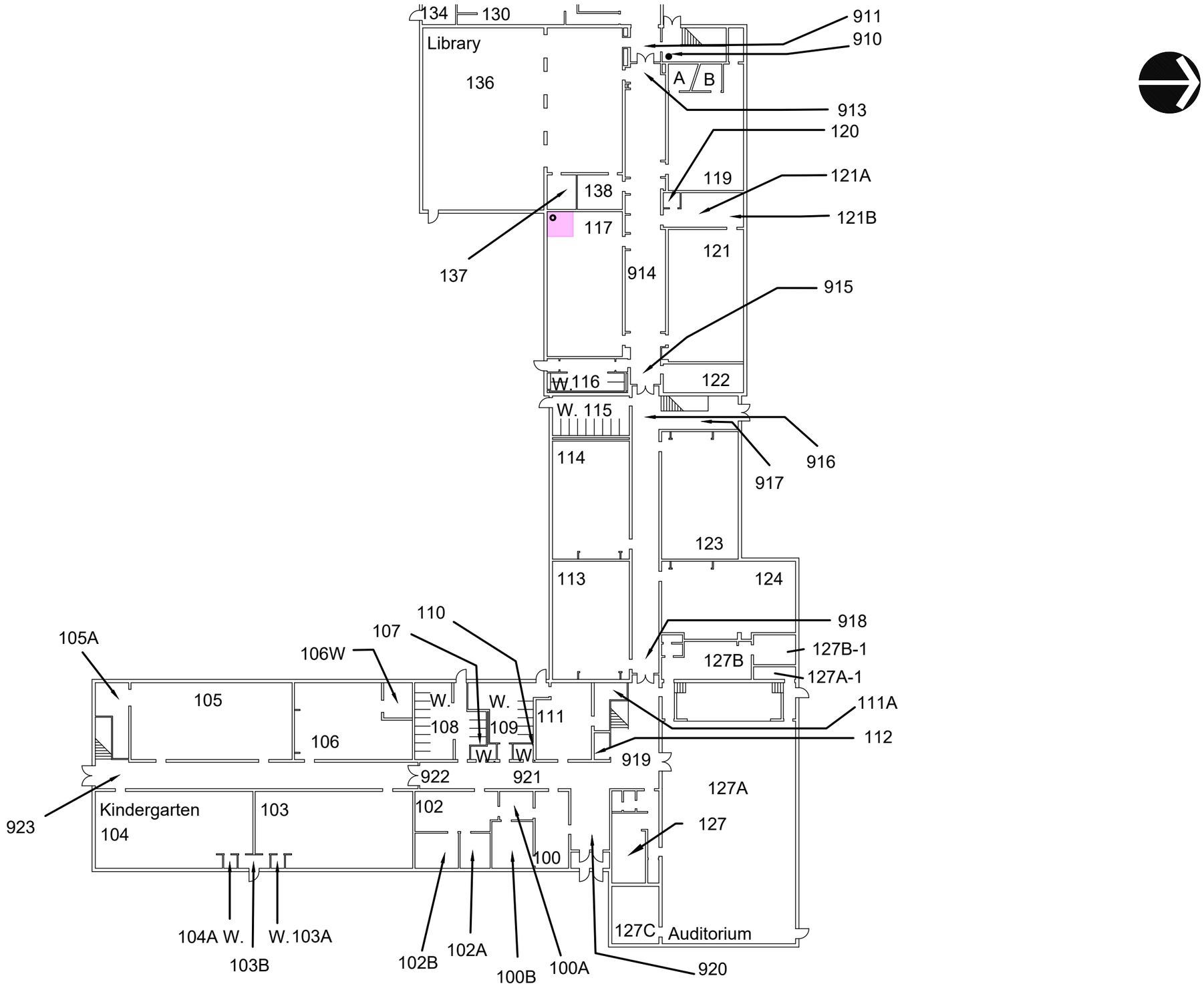
.2 all activities deemed necessary by the Inspector including area isolation, personnel relocation, additional visual inspections and air monitoring to confirm that the area has been adequately cleaned,

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

.2 *Final Clearance Test:*

Not Applicable.

END OF SECTION



LEGEND:

128 FUNCTIONAL SPACE

WORK AREA 1

NOTES:

1.

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATIONS OF WORK AREAS
FIRST FLOOR PLAN

ROLLING MEADOWS PUBLIC SCHOOL
5122 MOUNTAIN GROVE AVE, OAKVILLE, ONTARIO

Drawn By: M.S	Approved By: J.D	Project No: 30065539
Date: APRIL 2022	Scale: N.T.S	Drawing No: 30065539-1

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ARCADIS Design & Consultancy for natural and built assets

HALTON DISTRICT SCHOOL BOARD

REVISED PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

ROLLING MEADOWS PUBLIC SCHOOL

1522 MOUNTAIN GROVE AVENUE, BURLINGTON, ONTARIO

Revised April 6, 2022

30065539

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REVISED PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

Rolling Meadows Public School
1522 Mountain Grove Avenue,
Burlington, Ontario

Prepared for:

Halton District School Board

J.W. Singleton Education Center

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Our Ref.:
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Date:
April 6, 2022

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CONTENTS

1 INTRODUCTION 1-1

1.1 Scope of Work 1-1

2 REGULATORY DISCUSSION AND METHODOLOGY 2-1

2.1 Asbestos 2-2

2.2 Lead 2-3

2.3 Mercury 2-3

2.4 Silica 2-4

2.5 Vinyl Chloride 2-4

2.6 Acrylonitrile 2-5

2.7 Other Designated Substances 2-5

2.8 Polychlorinated Biphenyls (PCBs) 2-5

2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 2-6

2.10 Mould 2-7

3 RESULTS AND DISCUSSION 3-1

3.1 Asbestos 3-1

3.2 Lead 3-7

3.3 Mercury 3-8

3.4 Silica 3-9

3.5 Vinyl Chloride 3-9

3.6 Acrylonitrile 3-9

3.7 Other Designated Substances 3-9

3.8 Polychlorinated Biphenyls (PCBs) 3-10

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 3-10

3.10 Mould 3-10

4 USE AND LIMITATIONS OF THIS PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT 4-1

TABLES

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content 3-1

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead 3-8

APPENDICES

A Floor Plans

B Laboratory Reports

C Summary of Asbestos, Lead and Silica Work Classifications

1 INTRODUCTION

Arcadis Canada Inc. (Arcadis) was retained by the Halton District School Board (HDSB) to conduct a pre-renovation designated substances and hazardous materials survey in designated areas of Rolling Meadows Public School located at 1522 Mountain Grove Avenue, Burlington, 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*.

It is our understanding that renovations are to take place in designated areas of the building referred to in this report as the designated study areas. The survey was limited to the designated study areas and building materials that are anticipated to be affected by the proposed building upgrade project. The locations of the designated study areas were based on information provided to Arcadis by the HDSB.

The designated study areas and eras of construction 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;
- 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. Paul Smith of Arcadis visited the site on January 19 and 21, and April 7, 2021 to conduct the designated substances and hazardous materials survey at Rolling Meadows 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 specialty 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 *Survey of Asbestos-Containing Materials, Rolling Meadows Public School, 1522 Mountain Grove Avenue, Burlington, Ontario* dated September 25, 2020. Information and/or 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.

During the course of our site investigations, representative bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL Canada Inc. (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 that are outside of the designated study areas. This information is provided for references purposes only. Laboratory reports are provided in Appendix B. Locations of accessible asbestos-containing materials are outlined on the floor plans provided in Appendix A.

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

Sample No.	Sample Location	Sample Description	Asbestos Content
1-A	Room 100	(12” x 12’) tan vinyl floor mastic	**1% chrysotile** [(4)]
2-A	Room 102A	(9” x 9”) red vinyl floor tile	**6.1% chrysotile** [(4)]
2-A	Room 102A	(9” x 9”) red vinyl floor tile mastic	**2% chrysotile** [(4)]
3-A	Room 215	(9” x 9”) gbs vinyl floor tile mastic	None detected
3-B	Room 219	(9” x 9”) gbs vinyl floor tile mastic	None detected
3-C	Room 117	(9” x 9”) gbs vinyl floor tile mastic	None detected
4-A	Room 207	(9” x 9”) green vinyl floor tile mastic	**5% chrysotile**
5-A	Room 105	(12” x 12”) beige vinyl floor tile mastic	**3% chrysotile**
6-A	Room 136	carpet mastic	None detected
6-B	Room 136	carpet mastic	None detected
6-C	Room 136	carpet mastic	None detected
7-A	Room 116	ceramic tile grout	<0.25% chrysotile [(1,4)]
7-B	Room 116	ceramic tile grout	**1% chrysotile** [(4)]
8-A	Room 212	ceramic tile grout	**1% chrysotile** [(4)]
9-A	Room 127A	vinyl baseboard	None detected (PLM) None detected (TEM)
9-A	Room 127A	vinyl baseboard mastic	None detected
9-B	Room 127A	vinyl baseboard	None detected
9-B	Room 127A	vinyl baseboard mastic	None detected
9-C	Room 127A	vinyl baseboard	None detected
9-C	Room 127A	vinyl baseboard mastic	None detected
10-A	Outside Room 100	exterior brick mortar, 1960	None detected

Sample No.	Sample Location	Sample Description	Asbestos Content
10-B	Outside Room 104	exterior brick mortar, 1960	None detected
10-C	Outside Room 113	exterior brick mortar, 1960	None detected
11-A	Outside Room 117	exterior brick mortar, 1964	None detected
11-B	Outside Room 119	exterior brick mortar, 1964	None detected
11-C	Outside Room 121	exterior brick mortar, 1964	None detected
12-A	Outside Library	exterior brick mortar, 1973	None detected
12-B	Outside Library	exterior brick mortar, 1973	None detected
12-C	Outside Library	exterior brick mortar, 1973	None detected
13-A	Room 105	masonry mortar, 1960	None detected
13-B	Room 901	masonry mortar, 1960	None detected
13-C	Room 921	masonry mortar, 1960	None detected
14-A	Room 907	masonry mortar, 1964	None detected
14-B	Room 908	masonry mortar, 1964	None detected
14-C	Room 914	masonry mortar, 1964	None detected
15-A	Room 136	masonry mortar, 1973	None detected
15-B	Room 136	masonry mortar, 1973	None detected
15-C	Room 136	masonry mortar, 1973	None detected
16-A	Cor. 907 at 220	yellow textured wall paint, 1964	None detected
16-B	Cor. 908 at 216	yellow textured wall paint, 1964	None detected
16-C	Cor. 914 at 117	yellow textured wall paint, 1964	None detected
17-A	Room 100	white textured/shiny wall paint, 1960	None detected
17-B	Room 100	white textured/shiny wall paint, 1960	None detected
17-C	Room 100	white textured/shiny wall paint, 1960	None detected
1-A	Door at 920	Exterior black door frame caulking	**2% chrysotile** [(4)]
5-A	Room 923	Sprayed fireproofing, grey (Vestibule, 1960 Era)	None detected [(2)]
5-B	Room 923	Sprayed fireproofing, grey (Vestibule, 1960 Era)	None detected [(2)]
5-C	Room 923	Sprayed fireproofing, grey (Vestibule, 1960 Era)	None detected [(2)]
3-A	Corridor 923	(2’ x 4’) ceiling tile – chicken feet and random pinhole	None detected [(2)]
3-B	Corridor 923	(2’ x 4’) ceiling tile – chicken feet and random pinhole	None detected [(2)]
3-C	Corridor 923	(2’ x 4’) ceiling tile – chicken feet and random pinhole	None detected [(2)]
6A-Paint	Corridor 923	Paint – concrete block wall, 1960	None detected [(2)]
6B-Paint	Corridor 901	Paint – concrete block wall, 1960	None detected [(2)]
6C-Paint	Corridor 901	Paint – concrete block wall, 1960	None detected [(2)]
1-A	Room 207	(12” x 12”) ceiling tile adhesive-brown	None detected [(2)]
1-B	Room 205	(12” x 12”) ceiling tile adhesive-brown	None detected [(2)]
1-C	Room 203	(12” x 12”) ceiling tile adhesive-brown	None detected [(2)]
4-A	Room 206	concrete block mortar, 1960	None detected [(2)]

Sample No.	Sample Location	Sample Description	Asbestos Content
4-B	Room 222	concrete block mortar, 1960	None detected (2)
4-C	Room 219	concrete block mortar, 1964	None detected (2)
7-A	Room 206	(2' x 4') ceiling tile – pinhole and fissure on 2'	None detected (2)
7-B	Room 206	(2' x 4') ceiling tile – pinhole and fissure on 2'	None detected (2)
7-C	Room 207	(2' x 4') ceiling tile – pinhole and fissure on 2'	None detected (2)
8-A	Room 210	(2' x 4') ceiling tile – pinhole and deep random fissure	None detected (2)
8-B	Room 222	(2' x 4') ceiling tile – pinhole and deep random fissure	None detected (2)
8-C	Room 211	(2' x 4') ceiling tile – pinhole and deep random fissure	None detected (2)
9-A	Corr. 908	(2' x 4') ceiling tile – pinhole and thin chicken feet	None detected (2)
9-B	Corr. 905	(2' x 4') ceiling tile – pinhole and thin chicken feet	None detected (2)
9-C	Corr. 907	(2' x 4') ceiling tile – pinhole and thin chicken feet	None detected (2)
10-A	Room 215	(2' x 4') ceiling tile – pinhole and random small fissures	None detected (2)
10-B	Room 216	(2' x 4') ceiling tile – pinhole and random small fissures	None detected (2)
10-C	Room 217	(2' x 4') ceiling tile – pinhole and random small fissures	None detected (2)
1-A	Room 104	(12" x 12") vinyl floor tile – grey in colour with light and grey flecks	None detected (PLM) (2) None detected (TEM) (2)
1-B	Room 104	(12" x 12") vinyl floor tile – grey in colour with light and grey flecks	None detected (2)
1-C	Room 104	(12" x 12") vinyl floor tile – grey in colour with light and grey flecks	None detected (2)
2-A	Room 103	(9" x 9") vinyl floor tile – pink in colour with white streaks	**3.7% chrysotile (2)**
3-A	Room 106A	(12" x 12") vinyl floor tile – teal/grey in colour with light and dark flecks	None detected (PLM) (2) None detected (TEM) (2)
3-B	Room 127A	(12" x 12") vinyl floor tile – teal/grey in colour with light and dark flecks	None detected (2)
3-C	Room 127A	(12" x 12") vinyl floor tile – teal/grey in colour with light and dark flecks	None detected (2)
4-A	Room 102	(12" x 12") vinyl floor tile – tan in colour with brown and white flecks	None detected (PLM) (2) None detected (TEM) (2)
4-B	Room 100	(12" x 12") vinyl floor tile – tan in colour with brown and white flecks	None detected (2)
4-C	Room 119	(12" x 12") vinyl floor tile – tan in colour with brown and white flecks	None detected (2)
5-A	Room 111	(9" x 9") vinyl floor tile – beige in colour with white and brown streaks	**3.2% chrysotile (2)**

Sample No.	Sample Location	Sample Description	Asbestos Content
6-A	Room 122	(12" x 12") vinyl floor tile – beige in colour with light and grey specks	None detected (PLM) (2) None detected (TEM) (2)
6-B	Room 206	(12" x 12") vinyl floor tile – beige in colour with light and grey specks	None detected (2)
6-C	Room 206	(12" x 12") vinyl floor tile – beige in colour with light and grey specks	None detected (2)
8-A	Room 206A	(9" x 9") vinyl floor tile – white in colour with blsack streaks	**2.1% chrysotile (2)**
18-A	Room 127C	sipporex on ceiling	None detected (2)
18-B	Room 127C	sipporex on ceiling	None detected (2)
18-C	Room 127C	sipporex on ceiling	None detected (2)
20	Room 134	pipe fitting insulation – grey in colour	**45% chrysotile (2)**
21-A	Room 138	anti-sweat insulation with black paper	<0.25% chrysotile (TEM) (1,2)
21-B	Room 138	anti-sweat insulation with black paper	None detected (2)
21-C	Room 138	anti-sweat insulation with black paper	None detected (2)
22	Room 111	anti-sweat insulation with black paper	<0.25% chrysotile (1,2)
25-A	Room 134	(2' x 4') ceiling tile – random pinholes with dimpled face	None detected (2)
25-B	Room 134	(2' x 4') ceiling tile – random pinholes with dimpled face	None detected (2)
25-C	Room 912	(2' x 4') ceiling tile – random pinholes with dimpled face	None detected (2)
26-A	Room 119	(2' x 4') ceiling tile – ceramic look	None detected (2)
26-B	Room 119A	(2' x 4') ceiling tile – ceramic look	None detected (2)
26-C	Room 119B	(2' x 4') ceiling tile – ceramic look	None detected (2)
27-A	Room 117	(12" x 12") ceiling tile – random pinholes-	None detected (2)
27-B	Room 117	(12" x 12") ceiling tile – random pinholes-	None detected (2)
27-C	Room 117	(12" x 12") ceiling tile – random pinholes-	None detected (2)
5-A	Room 121	(12" x 12") vinyl floor tile – beige with brown streaks	None detected (PLM) (2) None detected (TEM) (2)
5-B	Room 121A	(12" x 12") vinyl floor tile – beige with brown streaks	None detected (2)
5-C	Room 121B	(12" x 12") vinyl floor tile – beige with brown streaks	None detected (2)
6-A	Room 121	(9" x 9") vinyl floor tile – beige with multi-coloured streaks	**1.1% chrysotile (2)**
7-A	Room 121	mastic under (12" x 12") vinyl floor tile	None detected (PLM) (2) None detected (TEM) (2)
7-B	Room 121	mastic under (12" x 12") vinyl floor tile	None detected (2)
7-C	Room 121	mastic under (12" x 12") vinyl floor tile	None detected (2)
16-A	Room 922	anti-sweat insulation with black paper	None detected (TEM) (2)
16-B	Room 921	anti-sweat insulation with black paper	None detected (2)

Sample No.	Sample Location	Sample Description	Asbestos Content
18-A	Room 121	(2' x 4') ceiling tile – "L" fissures with pinholes	None detected [2]
18-B	Room 121	(2' x 4') ceiling tile – "L" fissures with pinholes	None detected [2]
18-C	Room 121	(2' x 4') ceiling tile – "L" fissures with pinholes	None detected [2]
1-A	Room 106	mastic – black in colour under (9" x 9") vinyl floor tile	**0.65% chrysotile [2]**
8-A	Room 106	Mastic – brown in colour from (12" x 12") ceiling tile	None detected [2]
8-B	Room 106	Mastic – brown in colour from (12" x 12") ceiling tile	None detected [2]
8-C	Room 106	Mastic – brown in colour from (12" x 12") ceiling tile	None detected [2]
9-A	Room 106	(12" x 12") ceiling tile – white in colour with large and small holes	None detected [2]
9-B	Room 106	(12" x 12") ceiling tile – white in colour with large and small holes	None detected [2]
9-C	Room 106	(12" x 12") ceiling tile – white in colour with large and small holes	None detected [2]
RMPS#3	Room 128	rainwater leader pipe fitting insulation	**50% chrysotile [2]**
RMPS#4	Boys' Change Room	hot water heating pipe fitting insulation	**20% chrysotile [2]**
RMPS#8	Room 111	rainwater leader pipe fitting insulation	**20% chrysotile [2]**
RMPS#9	Room 111	hot water heating pipe fitting insulation	**57% chrysotile [2]**
RMPS#11	Corridor 922	rainwater leader pipe fitting insulation (anti-sweat insulation with black paper)	<0.5% chrysotile (TEM) [1,2]
RMPS#14	Corridor 922	hot water heating pipe fitting insulation	**21% chrysotile [2]**
RMPS#17	Corridor 922	rainwater leader pipe fitting insulation (anti-sweat insulation with black paper)	None detected (TEM) [2]
8-A	Room 105	caulking, grey interior window frame	None detected (TEM) [3]
8-B	Room 105	caulking, grey interior window frame	None detected [3]
8-C	Room 121	caulking, grey interior window frame	None detected [3]
9-A	Room 105	caulking, white, interior window frame, sectional wall	None detected (TEM) [3]
9-B	Room 105	caulking, white, interior window frame, sectional wall	None detected [3]
9-C	Room 105	caulking, white, interior window frame, sectional wall	None detected [3]
10-A	Exterior 105	caulking, grey, tacky exterior window frame/brick	None detected (TEM) [3]
10-B	Exterior 121	caulking, grey, tacky exterior window frame/brick	None detected [3]
10-C	Exterior 121B	caulking, grey, tacky exterior window frame/brick	None detected [3]
11-A	Exterior 105	caulking, grey, exterior window frame/glass	None detected (TEM) [3]
11-B	Exterior 121	caulking, grey, exterior window frame/glass	None detected [3]

Sample No.	Sample Location	Sample Description	Asbestos Content
11-C	Exterior 121B	caulking, grey, exterior window frame/glass	None detected (3)
12-A	Room 105A	caulking, grey old look exterior door	<0.25% chrysotile (TEM) (1), (3)
12-B	Room 105A	caulking, grey old look exterior door	<0.25% chrysotile (1), (3)
12-C	Room 105A	caulking, grey old look exterior door	<0.25% chrysotile (1), (3)

NOTES:

< = Less than.

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

(2) Sample results derived from a report prepared by Arcadis for the HDSB entitled *Survey of Asbestos-Containing Materials, Rolling Meadows Public School, 1522 Mountain Grove Avenue, Burlington, Ontario* dated September 25, 2020.

(3) Sample results derived from a report prepared by Arcadis for the HDSB entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, Rolling Meadows Public School, 1522 Mountain Grove Avenue, Burlington, Ontario* dated April 8, 2020.

(4) Material collected in the area have since been removed and are provided here for references purposes only.

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.

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:

- thermal insulation applied to pipe fittings below ceilings in Rooms 113, 114, 123, 127A, 128, 136 and Stairwell 910 and Corridor 916;
- thermal insulation applied to pipe fittings above ceilings in Rooms 104, 106W, 117, 136 and Corridors 913, 914, 915, 918, 919, 920, 921, 922 and 923;
- thermal insulation applied to pipe fittings (assumed to be present) above solid ceilings or in pipe chases in Rooms 103, 113, 114, 115, and 116;
- (9" x 9") vinyl floor tiles and underlying mastic in Rooms 113, 114, 123, 201, 202, 203, 205, 207, 208, 210, 211, 222 and 223, and Corridors 901, 902, 903 and 905;
- (9" x 9") vinyl floor tiles in Rooms 117, 124, 215, 216, 217, 218, 218, 219 and 220, and Corridors 907 and 908;
- (12' x 12') vinyl floor tile mastic in Rooms 103, 104, 105, 127A and 206; and

- (12” x 12”) vinyl floor tiles in Room 121;

During the course of the site investigations, Arcadis staff accessed cavities in exterior concrete block walls in several different locations throughout the designated study areas where renovation activities may disturb the concrete block walls. Materials suspected of containing asbestos (e.g. vermiculite block-fill insulation) was not observed in all block wall cavities accessed.

Asbestos-containing thermal insulation applied to pipe fittings is a white/grey-coloured cementitious material.

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

Thermal insulation is a friable material. The removal, alteration and/or 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/or disturbance of more than 1 m^2 of friable asbestos-containing materials is classified as a Type 3 operation.

Vinyl floor tiles and mastics are non-friable materials. The removal, alteration and/or disturbance of these non-friable asbestos-containing materials 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.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by Arcadis, including, but not limited to, areas outside the designated study areas, roofing materials, asphaltic pavement, etc., and/or in locations that are presently inaccessible (e.g., in pipe chases and behind walls). 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

During the course of our site investigations, samples of the predominant paint colours were collected and submitted to Bureau Veritas Inc, a laboratory in Mississauga, Ontario, for lead analysis. The results of bulk sample analysis for lead content are provided in Table 3.2, and a copy of the laboratory report is provided in Appendix B.

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

Sample No.	Sample Location	Sample Description	Lead Content (mg/kg)
P-1	Room 100	white door/frame paint	65
P-2	Room 105	beige radiator paint	**500**
P-3	Room 116	light blue wall paint	**260**
P-4	Room 119	black wall paint	16
P-5	Room 127A	grey wall paint	4.3
P-6	Room 208	yellow wall paint	**250**
P-7	Room 219	yellow wall paint	**430**
P-8	Hall 923	beige wall paint	**490**

NOTE:

mg/kg = milligrams lead per kilogram paint.

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

Based on the results of the laboratory analyses, lead was found to be present at levels above the 90 mg/kg criterion value (Surface Coating Materials Regulations) in five of the eight samples collected. The levels of lead were below 90 mg/kg in the remaining three samples collected in the designated study areas.

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.

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 cementitious pipe fitting insulation, ceiling tiles, mortar on the back side of ceramic tile bases, terrazzo, concrete, cement block walls, mortar and brick.

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 (T8 and T12 types) were observed in the designated study areas during the course of our site investigations. Light ballasts, such as those associated with some of 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.

Light ballasts, such as those associated with the other type of fluorescent lights (T12s) observed on site, are typically a magnetic type which may contain PCBs. This would also be confirmed by an electrician at the time of dismantling of the lights.

Inspection of product codes and date codes on the ballasts can be used to determine the likely presence or absence of PCBs.

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Equipment potentially containing ozone-depleting substances observed during the course of the site investigation was limited to refrigerators. Refrigerators are not anticipated to be affected by the proposed project.

3.10 Mould

Readily evident mould was not observed during the course of the site investigations. The inspection of mould was limited to visual observations of readily-accessible surfaces and did not include intrusive inspections of wall cavities. 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 the 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 the 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).

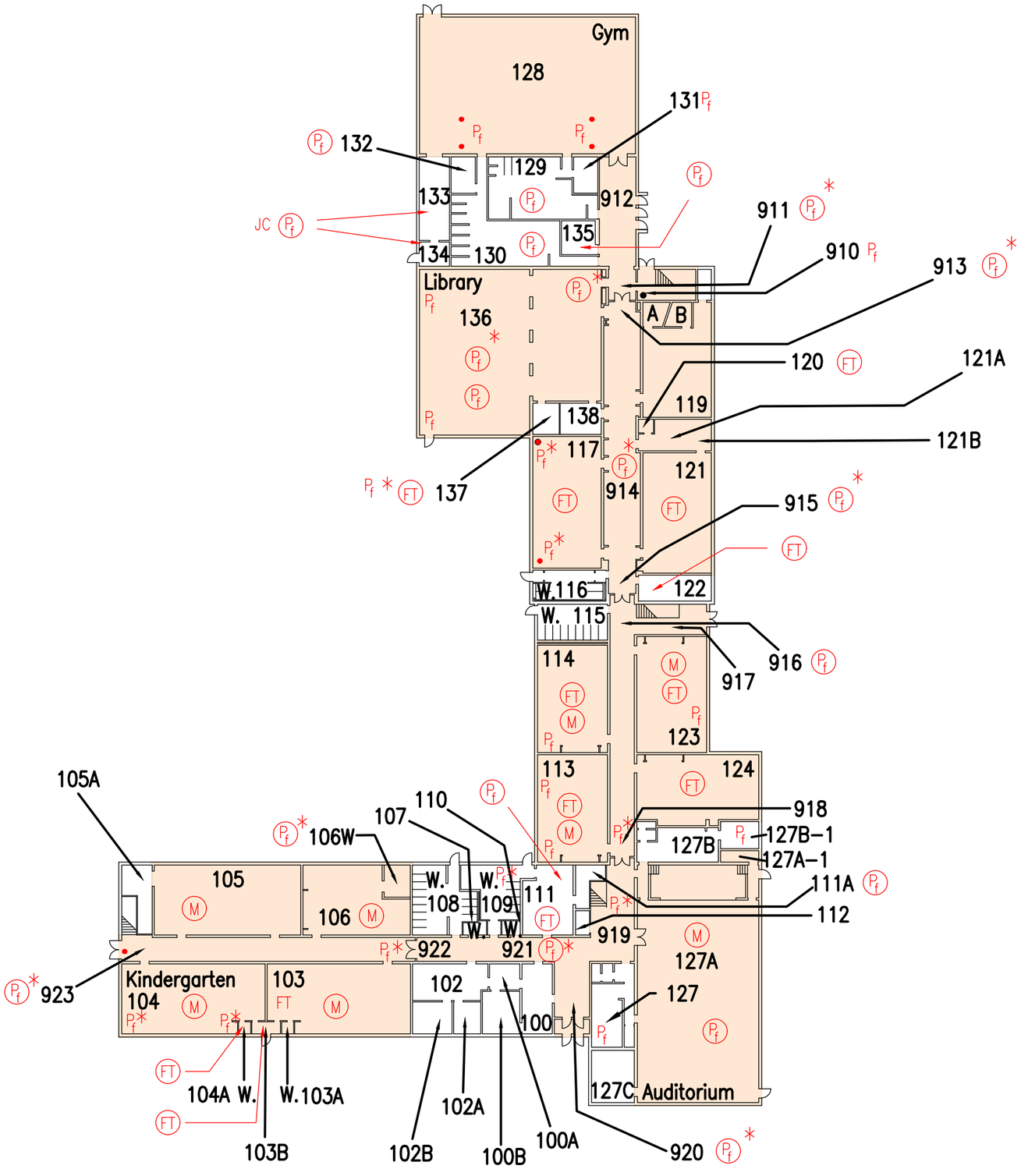
The material in this report reflects Arcadis Canada Inc.'s best judgment in light of the information available at the time of the investigation, which was performed on January 19 and 21, 2021.

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 the 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



LEGEND:

128	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
Pf	ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
FT	ASBESTOS FLOOR TILE (NON-FRIABLE)
JC	ASBESTOS DRYWALL JOINT COMPOUND (NON-FRIABLE)
M	ASBESTOS FLOOR TILE MASTIC (NON-FRIABLE)
	STUDY AREAS

NOTES:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS AND STUDY AREAS

ROLLING MEADOWS PUBLIC SCHOOL
1522 MOUNTAIN GROVE AVE, BURLINGTON, ON
FIRST FLOOR

Drawn By: D.K	Approved By: A.N.	Project No: 30065539	
Date: APRIL 2022	Scale: N.T.S	Drawing No: 30065539-1	

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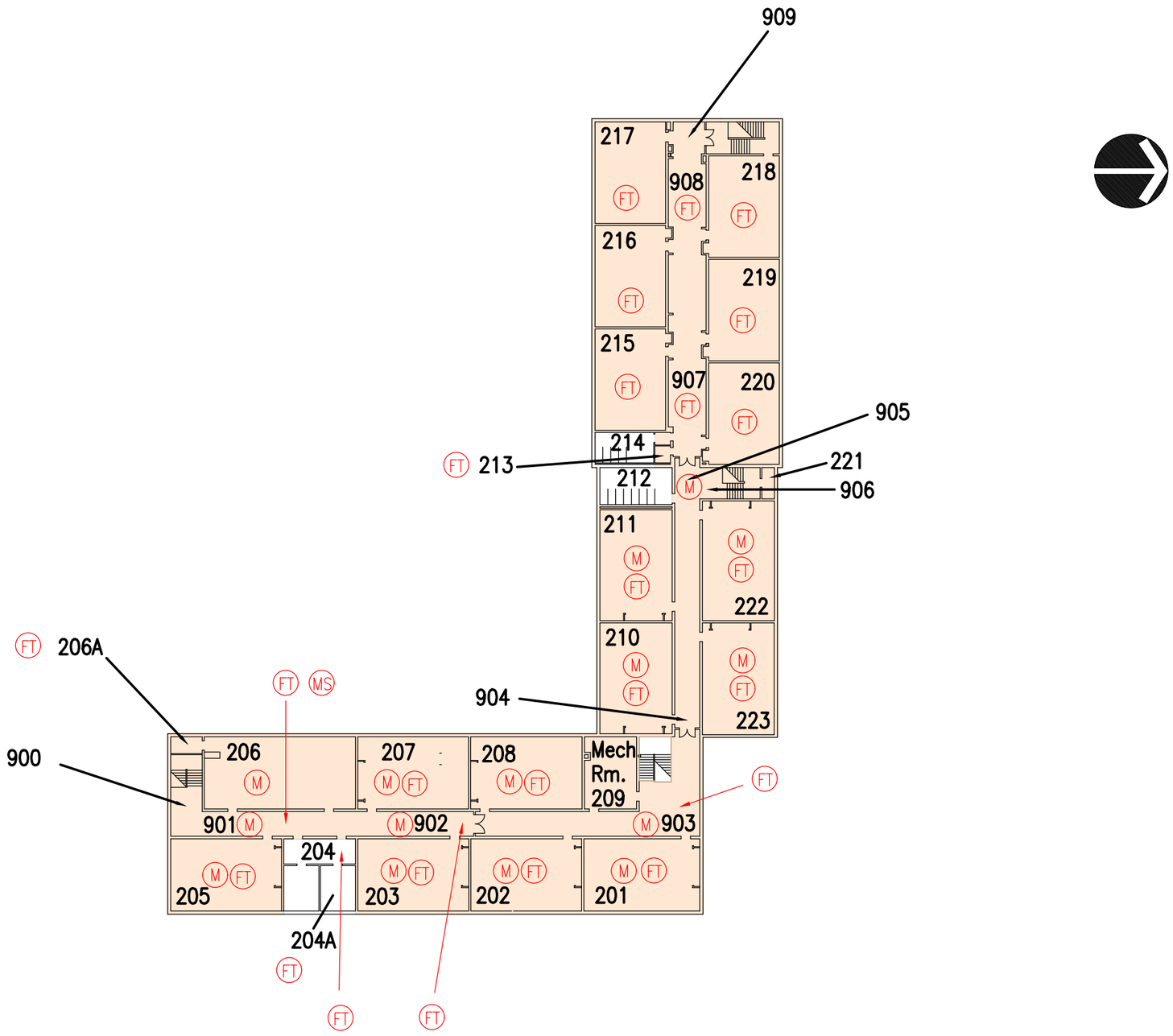
PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/7/2022 1:00 PM BY: THORWATH, CHANDRAKANTH



LEGEND:

217	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
✳	ABOVE CEILING ASSEMBLY
FT	ASBESTOS FLOOR TILE (NON-FRIABLE)
P_f	ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
M	ASBESTOS MASTIC (NON-FRIABLE)
	STUDY AREAS

NOTES:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS AND STUDY AREAS

ROLLING MEADOWS PUBLIC SCHOOL
1522 MOUNTAIN GROVE AVE, BURLINGTON, ON
SECOND FLOOR

Drawn By: D.K	Approved By: A.N.	Project No: 30065539	
Date: APRIL 2022	Scale: N.T.S	Drawing No: 30065539-2	

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APPENDIX B

Laboratory Reports

EMSL Canada Inc.

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EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Proj: Rolling Meadows PS

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 1/27/2021
Analyzed: 2/01/2021

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

Client Sample ID: 1-A **Lab Sample ID:** 552101093-0001
Sample Description: Room 100/12" x 12" tan vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black	0.0%	99.0%	1% Chrysotile	

Client Sample ID: 1-B **Lab Sample ID:** 552101093-0002
Sample Description: Room 100A/12" x 12" tan vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 1-C **Lab Sample ID:** 552101093-0003
Sample Description: Room 102/12" x 12" tan vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 2-A-Floor Tile **Lab Sample ID:** 552101093-0004
Sample Description: Room 102A/9" x 9" red vinyl floor tile and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/01/2021	Red	0.0%	93.9%	6.1% Chrysotile	
TEM Grav. Reduction	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 2-A-Mastic **Lab Sample ID:** 552101093-0004A
Sample Description: Room 102A/9" x 9" red vinyl floor tile and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/01/2021	Black	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 2-B **Lab Sample ID:** 552101093-0005
Sample Description: Room 102A/9" x 9" red vinyl floor tile and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 2-C **Lab Sample ID:** 552101093-0006
Sample Description: Room 102A/9" x 9" red vinyl floor tile and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

EMSL Canada Inc.

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http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Client Sample ID: 3-A **Lab Sample ID:** **552101093-0007**
Sample Description: Room 215/9" x 9" gbs vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black	0.0%	100.0%	None Detected	

Client Sample ID: 3-B **Lab Sample ID:** **552101093-0008**
Sample Description: Room 219/9" x 9" gbs vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black	0.0%	100.0%	None Detected	

Client Sample ID: 3-C **Lab Sample ID:** **552101093-0009**
Sample Description: Room 117/9" x 9" gbs vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black	0.0%	100.0%	None Detected	

Client Sample ID: 4-A **Lab Sample ID:** **552101093-0010**
Sample Description: Room 207/9" x 9" green vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black	0.0%	95.0%	**5% Chrysotile**	

Client Sample ID: 4-B **Lab Sample ID:** **552101093-0011**
Sample Description: Room 210/9" x 9" green vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 4-C **Lab Sample ID:** **552101093-0012**
Sample Description: Room 211/9" x 9" green vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 5-A **Lab Sample ID:** **552101093-0013**
Sample Description: Room 105/12" x 12" beige vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Black/Yellow	0.0%	97.0%	**3% Chrysotile**	

Client Sample ID: 5-B **Lab Sample ID:** **552101093-0014**
Sample Description: Room 127A/12" x 12" beige vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021				Positive Stop (Not Analyzed)	

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EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Client Sample ID: 5-C **Lab Sample ID:** **552101093-0015**
Sample Description: Room 206/12" x 12" beige vinyl floor tile mastic only

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021			Positive Stop (Not Analyzed)		

Client Sample ID: 6-A **Lab Sample ID:** **552101093-0016**
Sample Description: Room 136/carpet mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Yellow/Green	0.0%	100.0%	None Detected	

Client Sample ID: 6-B **Lab Sample ID:** **552101093-0017**
Sample Description: Room 136/carpet mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Yellow/Green	0.0%	100.0%	None Detected	

Client Sample ID: 6-C **Lab Sample ID:** **552101093-0018**
Sample Description: Room 136/carpet mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Yellow/Green	0.0%	100.0%	None Detected	

Client Sample ID: 7-A **Lab Sample ID:** **552101093-0019**
Sample Description: Room 116/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	White/Beige	0.0%	100.0%	**<1% Chrysotile**	
400 PLM Pt Ct	1/30/2021	White/Beige	0.0%	100.0%	**<0.25% Chrysotile**	

Client Sample ID: 7-B **Lab Sample ID:** **552101093-0020**
Sample Description: Room 116/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	White/Beige	0.0%	99.0%	**1% Chrysotile**	

Client Sample ID: 7-C **Lab Sample ID:** **552101093-0021**
Sample Description: Room 116/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021			Positive Stop (Not Analyzed)		

Client Sample ID: 8-A **Lab Sample ID:** **552101093-0022**
Sample Description: Room 212/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	White/Beige	0.0%	99.0%	**1% Chrysotile**	

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http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Client Sample ID: 8-B **Lab Sample ID:** **552101093-0023**
Sample Description: Room 212/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021			Positive Stop (Not Analyzed)		

Client Sample ID: 8-C **Lab Sample ID:** **552101093-0024**
Sample Description: Room 212/ceramic tile grout

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021			Positive Stop (Not Analyzed)		

Client Sample ID: 9-A-Baseboard **Lab Sample ID:** **552101093-0025**
Sample Description: Room 127A/vinyl baseboard and mastic - vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	1/30/2021	Brown	0.0%	100%	None Detected	
TEM Grav. Reduction	2/01/2021	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 9-A-Mastic **Lab Sample ID:** **552101093-0025A**
Sample Description: Room 127A/vinyl baseboard and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/01/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 9-B-Baseboard **Lab Sample ID:** **552101093-0026**
Sample Description: Room 127A/vinyl baseboard and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 9-B-Mastic **Lab Sample ID:** **552101093-0026A**
Sample Description: Room 127A/vinyl baseboard and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 9-C-Baseboard **Lab Sample ID:** **552101093-0027**
Sample Description: Room 127A/vinyl baseboard and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 9-C-Mastic **Lab Sample ID:** **552101093-0027A**
Sample Description: Room 127A/vinyl baseboard and mastic

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Yellow	0.0%	100.0%	None Detected	

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EMSL Canada Order 552101093
Customer ID: 55DCSL97
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Project ID:

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

Client Sample ID: 10-A **Lab Sample ID:** **552101093-0028**
Sample Description: 1960 at Room 100/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 10-B **Lab Sample ID:** **552101093-0029**
Sample Description: 1960 at Room 104/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 10-C **Lab Sample ID:** **552101093-0030**
Sample Description: 1960 at Room 113/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11-A **Lab Sample ID:** **552101093-0031**
Sample Description: 1964 at Room 117/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11-B **Lab Sample ID:** **552101093-0032**
Sample Description: 1964 at Room 119/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11-C **Lab Sample ID:** **552101093-0033**
Sample Description: 1964 at Room 121/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 12-A **Lab Sample ID:** **552101093-0034**
Sample Description: Library addition/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 12-B **Lab Sample ID:** **552101093-0035**
Sample Description: Library addition/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

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EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Client Sample ID: 12-C **Lab Sample ID:** **552101093-0036**
Sample Description: Library addition/exterior brick mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 13-A **Lab Sample ID:** **552101093-0037**
Sample Description: Room 105 (1960)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 13-B **Lab Sample ID:** **552101093-0038**
Sample Description: Room 901 (1960)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 13-C **Lab Sample ID:** **552101093-0039**
Sample Description: Room 921 (1960)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 14-A **Lab Sample ID:** **552101093-0040**
Sample Description: Room 907 (1964)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 14-B **Lab Sample ID:** **552101093-0041**
Sample Description: Room 908 (1964)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 14-C **Lab Sample ID:** **552101093-0042**
Sample Description: Room 914 (1964)/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 15-A **Lab Sample ID:** **552101093-0043**
Sample Description: Room 136/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

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Customer PO: 30065539
Project ID:

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

Client Sample ID: 15-B **Lab Sample ID:** **552101093-0044**
Sample Description: Room 136/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 15-C **Lab Sample ID:** **552101093-0045**
Sample Description: Room 136/masonry mortar

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 16-A **Lab Sample ID:** **552101093-0046**
Sample Description: 907 at 220 (1964)/yellow textured wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 16-B **Lab Sample ID:** **552101093-0047**
Sample Description: 908 at 216 (1964)/yellow textured wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 16-C **Lab Sample ID:** **552101093-0048**
Sample Description: 914 at 117 (1964)/yellow textured wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 17-A **Lab Sample ID:** **552101093-0049**
Sample Description: Room 100/white textures\d/shiny wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray/Beige	0.0%	100.0%	None Detected	

Client Sample ID: 17-B **Lab Sample ID:** **552101093-0050**
Sample Description: Room 100/white textures\d/shiny wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 17-C **Lab Sample ID:** **552101093-0051**
Sample Description: Room 100/white textures\d/shiny wall paint

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	1/30/2021	Gray/Beige	0.0%	100.0%	None Detected	

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

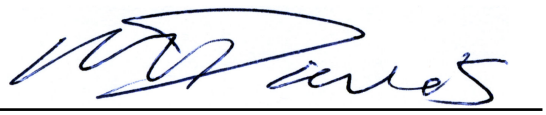
EMSL Canada Order 552101093
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Analyst(s):

Kira Ramphal	PLM (30) 400 PLM Pt Ct (1) PLM Grav. Reduction (1)
Natalie D'Amico	PLM (2) PLM Grav. Reduction (1) TEM Grav. Reduction (1)
Taylor Jones	PLM (10)

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. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. 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: 02/01/202109:52:22

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 552105607
Customer ID: 55DCSL97
Customer PO: 30065539
Project ID:

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

Proj: Rolling Meadows PS

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 4/07/2021
Analyzed: 4/08/2021

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

Client Sample ID: 1-A ***Lab Sample ID:*** **552105607-0001**

Sample Description: Door at 920 - exterior black door frame caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2021	Black	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 1-B ***Lab Sample ID:*** **552105607-0002**

Sample Description: Door at 920 - exterior black door frame caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2021				Positive Stop (Not Analyzed)	

Client Sample ID: 1-C ***Lab Sample ID:*** **552105607-0003**

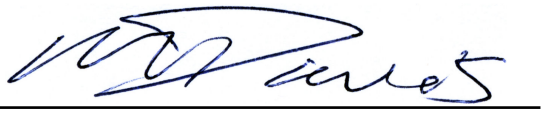
Sample Description: Door at 920 - exterior black door frame caulking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/08/2021				Positive Stop (Not Analyzed)	

Analyst(s):

Taylor Jones PLM (1)

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. 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. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. 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: 04/08/202116:01:07

Your P.O. #: 30065539
Site Location: ROLLING MEADOWS PS
Your C.O.C. #: n/a

Attention: Paul Smith

ARCADIS Canada Inc
121 Granton Dr
Unit 12
Richmond Hill, ON
CANADA L4B 3N4

Report Date: 2021/02/04
Report #: R6505681
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C128404
Received: 2021/02/02, 09:55

Sample Matrix: Paint
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals in Paint	8	2021/02/04	2021/02/04	CAM SOP-00408	EPA 6010D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA. Where applicable, the analytical testing herein was performed in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Bureau Veritas is accredited by SCC (Lab ID 97) for all specific parameters as required by Ontario Regulation 153/04.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your P.O. #: 30065539
Site Location: ROLLING MEADOWS PS
Your C.O.C. #: n/a

Attention: Paul Smith

ARCADIS Canada Inc
121 Granton Dr
Unit 12
Richmond Hill, ON
CANADA L4B 3N4

Report Date: 2021/02/04
Report #: R6505681
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C128404
Received: 2021/02/02, 09:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marijane Cruz, Senior Project Manager
Email: Marijane.Cruz@bureauveritas.com
Phone# (905)817-5756
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C128404
Report Date: 2021/02/04

ARCADIS Canada Inc
Site Location: ROLLING MEADOWS PS
Your P.O. #: 30065539

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

BV Labs ID		OTC417		OTC418		OTC419		
Sampling Date		2021/01/19		2021/01/19		2021/01/19		
COC Number		n/a		n/a		n/a		
	UNITS	P-100-WHITE DOOR/FRAME PAINT	RDL	P-105-BEIGE RADIATOR PAINT	RDL	P-116-LIGHT BLUE WALL PAINT	RDL	QC Batch
Metals								
Lead (Pb)	mg/kg	65	19	500	17	260	1.7	7184131

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		OTC420		OTC421		OTC422		
Sampling Date		2021/01/19		2021/01/19		2021/01/19		
COC Number		n/a		n/a		n/a		
	UNITS	P-119-BLACK WALL PAINT	RDL	P-127A-GREY WALL PAINT	RDL	P-208-YELLOW WALL PAINT	RDL	QC Batch
Metals								
Lead (Pb)	mg/kg	16	8.2	4.3	2.4	250	1.3	7184131

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		OTC423		OTC424		
Sampling Date		2021/01/21		2021/01/19		
COC Number		n/a		n/a		
	UNITS	P-219-YELLOW WALL PAINT	RDL	P-923-BEIGE WALL PAINT	RDL	QC Batch
Metals						
Lead (Pb)	mg/kg	430	1.0	490	1.2	7184131

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C128404
Report Date: 2021/02/04

ARCADIS Canada Inc
Site Location: ROLLING MEADOWS PS
Your P.O. #: 30065539

TEST SUMMARY

BV Labs ID: OTC417 **Collected:** 2021/01/19
Sample ID: P-100-WHITE DOOR/FRAME PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC418 **Collected:** 2021/01/19
Sample ID: P-105-BEIGE RADIATOR PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC419 **Collected:** 2021/01/19
Sample ID: P-116-LIGHT BLUE WALL PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC420 **Collected:** 2021/01/19
Sample ID: P-119-BLACK WALL PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC421 **Collected:** 2021/01/19
Sample ID: P-127A-GREY WALL PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC422 **Collected:** 2021/01/19
Sample ID: P-208-YELLOW WALL PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

BV Labs ID: OTC423 **Collected:** 2021/01/21
Sample ID: P-219-YELLOW WALL PAINT **Shipped:**
Matrix: Paint **Received:** 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C128404
Report Date: 2021/02/04

ARCADIS Canada Inc
Site Location: ROLLING MEADOWS PS
Your P.O. #: 30065539

TEST SUMMARY

BV Labs ID: OTC424
Sample ID: P-923-BEIGE WALL PAINT
Matrix: Paint

Collected: 2021/01/19
Shipped:
Received: 2021/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	7184131	2021/02/04	2021/02/04	Jolly John

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

Sample OTC417 [P-100-WHITE DOOR/FRAME PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC418 [P-105-BEIGE RADIATOR PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC419 [P-116-LIGHT BLUE WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC420 [P-119-BLACK WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC421 [P-127A-GREY WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC422 [P-208-YELLOW WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample OTC424 [P-923-BEIGE WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C128404
Report Date: 2021/02/04

QUALITY ASSURANCE REPORT

ARCADIS Canada Inc
Site Location: ROLLING MEADOWS PS
Your P.O. #: 30065539

			Matrix Spike		Method Blank		RPD		QC Standard	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**Value**	**UNITS**	**Value (%)**	**QC Limits**	**% Recovery**	**QC Limits**
7184131	Lead (Pb)	2021/02/04	NC	75 - 125	<1.0	mg/kg	3.1 (1)	35	107	75 - 125

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

(1) Duplicate Parent ID

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

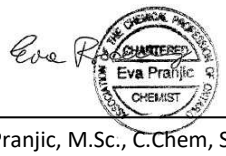
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C128404
Report Date: 2021/02/04

ARCADIS Canada Inc
Site Location: ROLLING MEADOWS PS
Your P.O. #: 30065539

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Arcadis Canada	Company Name:	Quotation #:	Regular TAT (5-7 days) Most analyses
Contact Name: Paul Smith	Contact Name:	P.O. #/ AFE#: 30065539	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 121 Crantar Drive #12 Richmond Hill, ON	Address:	Project #:	Rush TAT (Surcharges will be applied)
Phone: 416.953.0256 Fax:	Phone: Fax:	Site Location: Rolling Meadows PS	1 Day 2 Days 3-4 Days
Email: paul.smith@arcadis.com	Email:	Site #:	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Site Location Province:	Rush Confirmation #:
		Sampled By:	

Regulation 153	Other Regulations
Table 1 Res/Park Med/ Fine	CCME Sanitary Sewer Bylaw
Table 2 Ind/Comm Coarse	MISA Storm Sewer Bylaw
Table 3 Agri/ Other	PWQO Region
Table ____	Other (Specify)
FOR RSC (PLEASE CIRCLE) Y / N	REG 558 (MIN. 3 DAY TAT REQUIRED)
	REG 406 Table

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	LEAD						HOLD- DO NOT ANALYZE
P1	100 - white door/frame	Jan 19,	2021										X						
P2	105 - beige radiator paint	"											X						
P3	116 light blue wall paint	"											X						
P4	119 - black wall paint	"											X						
P5	127A - grey wall paint	"											X						
P6	208 - yellow wall paint	"											X						
P7	219 - yellow wall paint	Jan 21,	2021										X						
P8	923 - beige wall paint	Jan 19,	2021										X						
10																			

LABORATORY USE ONLY		
CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
N	N	N/A

COOLING MEDIA PRESENT: Y / (N)

COMMENTS

02-Feb-21 09:55
Marijane Cruz
C128404
TIRF ENV-1112

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
P.S. / Paul Smith	2021/01/30		[illegible]	2021/02/02	09:55	

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.

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