



Scope of Work – Designated Substances Abatement/Procedures

Faculty of Dentistry Clinic 2 Demolition and Abatement

Project# P065-21-050

Dentistry Building (Building #065) 124 Edward Street Toronto M5G 1G6

The intent of this scope is to remove asbestos-containing materials and other designated substances, as required for the project, within the above-mentioned project locations. This document also includes procedures to be followed while disturbing or working around the designated substances. Designated substances are defined in O. Reg. 490/09 under Occupational Health and Safety Act, R.S.O. 1990).

In addition to this scope of work, the project shall be governed in its entirety by Ontario Occupational Health and Safety Act and any Regulations made under this Act.

For information on designated substances for the current project please refer to *Designated Substances in Building Materials Survey Report* issued for this project.

All items of scope of work listed in this document are part of the Base Bid Price unless otherwise specified.

All ventilation shutdowns for the purpose of isolating and capping the ventilation system will be scheduled after regular hours from 6:00pm to 6:00am all days [NO CHANGE EXPECTED].

All asbestos abatement work and associated demolition are scheduled to be carried out after regular hours from 6:00pm to 6:00am weekdays and weekends [NO CHANGE EXPECTED].

All adjacent spaces and offices shall remain operational during the project. It is important that noise level and worker movement remains at an absolute minimum within the work areas and in the adjacent corridors.

Any demolition, new construction or other work item that may disturb existing or discovered asbestos-containing materials shall be performed by qualified asbestos workers following appropriate asbestos procedures.

The project scope includes all locations in the building as shown on the Project Drawings [current project locations] and various corridors (type 2 enclosures for duct cap and cut if required).

It is the contractor's responsibility to verify the extent of work, quantities and other site conditions.

Where required, in order to achieve the architectural, electrical and mechanical requirements of this project, the abatement work and procedures provided in the sub-sections below shall be completed by the contractor.

TRAINING

Any worker who may inadvertently come into contact with any asbestos-containing materials in the course of their work for the current project must have at a minimum Asbestos Awareness Training as outlined in the University of Toronto, Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>.

Workers performing any asbestos work will require appropriate training, including respirator fit testing, as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.



Workers performing removal or disturbance of surfaces applied with lead based paint and lead-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Lead Management Program/Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Workers performing removal or disturbance of silica-containing materials shall have appropriate training, including respirator fit testing, as identified in the Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Workers performing removal or disturbance of other hazardous materials shall require appropriate training as specified in the relevant regulations/guidelines.

Work will only be allowed once the training certificates of workers working inside asbestos enclosures are verified by the consultants and/or the University of Toronto designated staff.

SCOPE OF WORK DETAILS

Negative air machines, able to maintain a negative pressure of 0.02 inches of water relative to the areas outside the enclosure will be required for ALL Type 2 and Type 3 enclosures. Prior to the start of work the contractor will arrange DOP tests of all negative air machines on site.

Reinstating (if required) of any components disturbed or removed for the reason of exhaust (indoors or outdoors) is included in this scope.

The negative air machines shall be installed appropriately in order to obtain uniform negative air pressure throughout the Type 2 and Type 3 enclosures. A 3rd party consultant will perform smoke tests to confirm uniform distribution of negative air pressure throughout the enclosures.

Any worker performing work within any Type 3 and Type 2 enclosure or working under Type 2 conditions or inspecting above ceiling areas will require appropriate training as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, including respirator fit testing.

Rip-proof (orange) polyethylene sheet (6 mills thickness) shall be used for all enclosures and drop sheets.

All tools or other equipment shall be decontaminated by using a vacuum equipped with a HEPA filter and by damp wiping/washing when leaving the asbestos containment area

The project drawings identify removal and disposal of ceramic tile (lead-containing), grout and adhesives from various current project locations. It is recommended that locations of ceramic tiles which fall within the Type 3 and Type 2 work enclosures be removed within the same enclosures in order to avoid reconstruction of enclosure as required under the Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Lead Management Program/Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at



<https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

For removal of building materials please follow demolition drawings, demolition key notes and other details included in project documents. Procedures for removing or disturbing the designated substances are provided in the succeeding sections as well as the Designated Substances in Building Materials Survey Report issued for this project.



1. SECTION 1: TYPE 3 ASBESTOS ABATEMENT

1.1 Vinyl Sheet and Friable Paper Backing Removal (Type 3)

- 1.1.1 Locations included are Room 319, under the entire elevated platform and corridors in the north section of Room 207 including all of Rooms 207A, 207B, 207C and the surrounding corridors.
- 1.1.2 Set-up full Type 3 enclosure/s. All walls to be sealed from floor to existing ceilings.
- 1.1.3 Partial areas outside the work areas can be used as storage, staging and decontamination chambers area. **Note: the contractor shall protect the flooring under the decontamination chambers. Any damage to flooring shall be repaired by the contractor at no extra cost to the Project.**
- 1.1.4 Remove and dispose as asbestos waste, all vinyl sheet floor, paper and adhesive mastic.
- 1.1.5 The asbestos-containing backing paper of vinyl sheet flooring is known to be adhered very firmly to the floor. Grinding of floor shall be done to remove the paper in its entirety. Grind asbestos-containing paper and any adhesive mastic present under the sheet flooring from all above locations. These compounds shall be removed, completely down to the concrete floor finish, by using grinders (Diamatic 780PRO or equivalent) equipped with an individual HEPA filtered dust collecting assembly. Removal from congested spots or edges shall be performed by smaller hand grinders equipped with HEPA filtered attachments.
- 1.1.6 If any walls are scheduled for removal inside the enclosures set up for this work and non-asbestos fireproofing is present, remove the wall material surrounding any sprayed structural steel, to access and completely remove any asbestos fireproofing that may be present on the steel beams.
- 1.1.7 Clean and decontaminate enclosure/s for air clearance sampling to be performed by others.
- 1.1.8 Remove and dispose of the enclosure upon completion of work.

1.2 Sprayed Fireproofing Removal and other Abatement (Type 3)

- 1.2.1 Locations included are Room 221, 221A, section of corridor 227K outside Room 221 and Stairwells 218S and 319S.
- 1.2.2 Set-up and maintain Type 2 asbestos enclosures, if required, outside the work areas in order to allow the mechanical subcontractor to cut and cap the ventilation system. It is suggested that ventilation to the rooms scheduled for fireproofing abatement be done simultaneously to avoid cross contamination during abatement (since walls are also scheduled for removal).
- 1.2.3 Prior to removing ceiling or beginning any asbestos contamination, provide openings in ceilings in order to allow the GC mechanical sub-contractor to cut and cap the ventilation system, under Type 2 conditions.
- 1.2.4 Remove and dispose as asbestos waste, all vinyl floor tiles and adhesive mastic from locations where present in the above rooms. It is recommended that flooring removal and subsequent grinding of mastic and other floor adhesives be performed at the beginning to avoid re-construction of complete Type 2 asbestos enclosure (including ceiling) later.
- 1.2.5 Grind adhesive mastic present under the tiles from all above locations. Adhesive mastic/leveling compounds shall be removed, completely down to the concrete floor finish, by using grinders (Diamatic 780PRO or equivalent) equipped with an individual HEPA

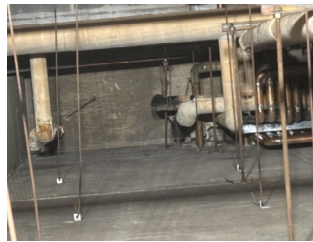


- filtered dust collecting assembly. Adhesive mastic/leveling compound removal from congested spots or edges shall be performed by smaller hand grinders equipped with HEPA filtered attachments.
- 1.2.6 Partial corridors outside the work areas can be used as storage, staging and decontamination chambers area. **Note: the contractor shall protect the flooring under the decontamination chambers. Any damage to flooring shall be repaired by the contractor at no extra cost to the Project.**
 - 1.2.7 Set-up full Type 3 enclosure/s.
 - 1.2.8 In first phase, all walls to be sealed from floor to existing ceilings.
 - 1.2.9 Make safe all electrical/data infrastructure.
 - 1.2.10 Remove and dispose of all layers of ceilings present, including ceiling tiles, insulation, hangers, framing, support structure(s), etc. as asbestos waste.
 - 1.2.11 Metal ceiling lights shall be removed, cleaned and disposed.
 - 1.2.12 Clean, remove and dispose all asbestos-containing sprayed fireproofing overspray from ducts, conduits, pipes, walls or any other surfaces/structural members.
 - 1.2.13 Fire Separations & Fire Stop Materials: Seal all pipe, conduits, ducts, other penetrations, masonry cracks/joints, and any other openings/gaps etc. in walls and ceilings. Advise the supervising consultants or University of Toronto designated staff inspect and verify completion of this item of work.
 - 1.2.14 Construct upper seals at all work area perimeter walls to avoid cross contamination of adjacent areas.
 - 1.2.15 Seal with rip-proof (orange) polyethylene sheet (6 mills thickness) the following typical areas inside the type 3 enclosure:
 - 1.2.15.1 All walls from ceiling grid level to deck.
 - 1.2.15.2 Column surrounds.
 - 1.2.15.3 Mechanical risers and shafts.
 - 1.2.16 Remove and dispose of all ductwork as identified on the drawings for these rooms.
 - 1.2.17 Cover and seal all ductwork, diffusers, return air grilles, plumbing - that are to remain.
 - 1.2.18 Asbestos-containing (Chrysotile) sprayed fireproofing is present on structural beams located above existing ceilings. Remove and dispose all asbestos-containing (Chrysotile) sprayed fireproofing where present. ***Please Note: Historically the sprayed fireproofing present in this area consists of a hard and dense material that contains some cementitious bonding material. Include complete removal including any bonding materials in your price.***
 - 1.2.19 **No power tools shall be used to remove sprayed fireproofing material.**
 - 1.2.20 For interior walls separating the sprayed fireproofing removal areas: Remove and dispose sections of block masonry walls at locations where beams cross the walls, in order to access and completely remove fireproofing spray. **Cover, using 6mil polyethylene sheet, top of the exposed walls to restrict any asbestos debris falling in.**



- 1.2.21 Remove and dispose (as asbestos waste) all existing thermal mechanical insulation present above ceiling on ductwork, piping systems, valves, bends, fittings, ductwork and hangers etc.
- 1.2.22 In all cases provide protection from any water or other liquids from seeping through the floor penetrations.
- 1.2.23 The contractor to protect against any damages to all electrical/mechanical systems, sprinklers, cables, conduits etc. during the execution of work.
- 1.2.24 Clean and decontaminate enclosure/s for air clearance sampling to be performed by others.
- 1.2.25 Remove and dispose enclosure set-up upon completion of work.
- 1.2.26 Fireproofing Re-spray:
 - 1.2.26.1 Submit MSDS of the re-spray product for approval prior to commencement of work.
 - 1.2.26.2 All personal protective equipment and engineering controls requirements, as specified in the MSDS, shall be implemented. The supervising consultants or University of Toronto designated staff shall inspect and verify PPE and engineering controls in compliance with the MSDS.
 - 1.2.26.3 Cover all walls, conduits, ductwork, pipes and other elements to avoid overspray. Complete the application with this method, all as specified herein, including any associated work shall be included.
 - 1.2.26.4 Re-spray fireproofing (2 hours assembly) on areas where removed with approved material, dyed blue. **Please Note:** The existing structural steel is coated with an unknown primer, the application of the spray fireproofing shall comply with ULC published "BXUVC. GuideInfo – Fire Resistance Ratings", Sub-Section "New Requirements for the Use of Sprayed-Applied Fire-Resistive Materials on Primed Steel Surfaces, Effective date for the revised clarifications is January 01, 2009". Prepare the affected and relevant steel substrates with metal lath in compliance to ULC listing requirements and specified requirements. Please refer to attached fireproofing re-spray material specifications.
 - 1.2.26.5 **Please Note:** At the end of work shift, all floors shall be vacuumed and wiped (to be inspected and approved by others). On completion of work, all poly and other covers shall be removed and disposed. All floors shall be vacuumed and wiped (to be inspected and approved by others).
- 1.3 **Removal and Disposal of Thermal Mechanical Insulation and Firestop Materials – above Ceiling Spaces (Type 3)**
 - 1.3.1 Locations include above ceiling spaces of Room 133 and 102
 - 1.3.2 This work is going to be scheduled in multiple phases since the clinics in Room 133 and 102 may remain operational during the project and only partial closures will be scheduled. The scope below applies to each individual phase.
 - 1.3.3 Multiple mobilizations and demobilizations are planned, and the contractor should price accordingly. The General Contractor shall coordinate scheduling.

- 1.3.4 Install scaffolding in the section/phase made available. All scaffold and/or other equipment assemblies in order to access work locations shall be in accordance with the standards required under applicable Acts and Regulations.
- 1.3.5 Set-up a complete Type 2 enclosure on top of the scaffolding.
- 1.3.6 Remove all ceiling panels/tiles inside the Type 2 enclosure. Metal pan ceiling, all fiberglass insulation and non-asbestos paper on the ceiling panels can be disposed of as non-asbestos waste.
- 1.3.7 Convert the Type 2 enclosure into full asbestos Type 3 enclosure.
- 1.3.8 Install upper seals around the entire perimeter of the current workspace.
- 1.3.9 A tunnel shall be constructed from the top to the bottom of the scaffolding to connect to a decontamination area including shower on the floor level.
- 1.3.10 Remove and dispose of all asbestos-containing and non-asbestos insulation present on pipe straights and pipe fittings (including elbows, tees, bends, pipe tapers, pipe straights etc.) connecting to the dental chairs and all other mechanical services scheduled for removal as shown on the mechanical demo drawings. Pictures below represent a general view of typical plumbing arrangement above ceilings for the dental chairs.



- 1.3.11 The University of Toronto can schedule above ceiling inspection if requested by the contractors.
- 1.3.12 Remove and dispose of all asbestos-containing and non-asbestos firestopping in the sleeves supplying services to the rooms above. This will require covering the sleeves with poly or an enclosure around the sleeves on the floor above to protect the floor above from cross contamination.
- 1.3.13 Remove and dispose of the diffusers as shown on the mechanical drawings, HEPA vacuum as far as can be reached inside the duct after the diffuser is removed in each location.
- 1.3.14 Clean and decontaminate enclosure/s for air clearance sampling to be performed by others.
- 1.3.15 Remove and dispose enclosure set-up upon completion of work.

1.4 Removal and Disposal of Ductwork and Air Handling Equipment (Type 3)

- 1.4.1 The intent of this section is to remove and dispose of all ductwork and other air handling equipment as shown on the project drawings and not mentioned above in the type 3 fireproofing removal section.
- 1.4.2 The Project Drawings shall be followed for extent of isolation/capping and removal of all duct work, and other air handling equipment.
- 1.4.3 Set up and maintain full Type 3 asbestos enclosure/s in locations where ductwork or other air handling equipment removal is required.



- 1.4.4 Partial areas outside the work locations can be used as storage, staging and decontamination chambers area. **Note: the contractor shall protect the flooring under the decontamination chambers. Any damage to flooring shall be repaired by the contractor at no extra cost to the Project.**
- 1.4.5 Remove the ceilings under the sections of ductwork scheduled for removal.
- 1.4.6 Once the ceilings are removed, install upper seals from the ceiling to the deck surrounding the ductwork scheduled for removal. Please refer to the project architectural drawings for ceiling reconstruction details.
- 1.4.7 If any block walls or column surrounds are scheduled for removal inside the enclosures set up for this work and non-asbestos fireproofing is present, remove the block, drywall or plaster surrounding any sprayed structural steel, to access and completely remove any asbestos fireproofing that may be present on the structural steel.
- 1.4.8 Following Type 3 asbestos abatement procedures, remove and dispose (as asbestos waste) all ductwork and other air handling equipment, as required under the mechanical demolition scope of the current project.
- 1.4.9 The contractor has the option of cleaning the ductwork and disposing of it as non-asbestos waste. Any ductwork that has internal insulation cannot be cleaned appropriately and shall be disposed of as asbestos waste.
- 1.4.10 Clean and decontaminate enclosure/s for air clearance sampling to be performed by others.
- 1.4.11 Remove and dispose enclosure set-up upon completion of work.

END OF SECTION 1.



2. SECTION 2: TYPE 2 ASBESTOS ABATEMENT

2.1 Removal and Disposal of Shaft Block Wall, Vinyl Floor Tile and Floor Mastic

- 2.1.1 Locations include Room 128, 202K, 207D, 207E, 207F, 207K, 208, 210, 212, 221, 225K and 226K.
- 2.1.2 Please follow the project architectural, electrical and mechanical drawings for specific locations and extent of all items described herein and should be referred to for any specialized notes or details including locations where multiple layers of flooring are present. Any demolition work that may disturb asbestos-containing materials shall be performed by a qualified abatement contractor.
- 2.1.3 Set-up type 2 asbestos enclosure/s (full enclosure and negative air pressure) at locations where asbestos-containing vinyl floor tiles and associated mastic are scheduled for removal. The enclosure must extend to the deck if the ceiling is removed before the floor tiles.
- 2.1.4 If any walls are scheduled for removal inside the enclosures set up for this work and non-asbestos fireproofing is present, remove the wall material surrounding any sprayed structural steel, to access and completely remove any asbestos fireproofing that may be present on the steel beams.
- 2.1.5 Shaft walls are scheduled to be removed in Room 207D and 212. Asbestos-containing sprayed fireproofing is present inside these shafts. The shaft wall removal is to be done inside the Type 2 enclosures set up for the floor tile removal in these rooms. The enclosure for this work must be extended to the deck. Blocks are to be disposed of asbestos waste or be appropriately cleaned for non-asbestos disposal. Please refer to the architectural demo drawing for wall removal locations and specialized notes.
- 2.1.6 Once required sections of walls are removed. All shaft openings shall be sealed with plywood wrapped in fire rated poly. Seals shall be securely fastened with screws installed through wood and the poly. Appropriately secure all shaft openings. Follow the Ontario H&S Act to install any bracing required to mitigate fall and any other hazards Place an asbestos warning sign on the seal/barrier.
- 2.1.7 Remove and dispose all vinyl floor tiles and adhesive mastics.
- 2.1.8 Grind adhesive mastic/glue present under existing flooring down to the concrete floor finish, by using grinders (Diamatic 780PRO or equivalent) equipped with an individual HEPA filtered dust collecting assembly. Adhesive mastic/leveling compound removal from congested spots or edges shall be performed by smaller hand grinders equipped with HEPA filtered attachments.
- 2.1.9 Clean, decontaminate enclosure/s and dispose of the enclosure as asbestos waste upon approval and visual inspection performed by others.

2.2 Removal and Disposal of Block Masonry around Structural Steel Beams in Areas where Non-Asbestos Fireproofing is Present (Type 2)

- 2.2.1 The intent of this section is to ensure asbestos fireproofing that may be concealed on the beams inside or hidden by block, drywall or plaster is removed completely before the entire wall is removed in project locations not already covered by Type 2 or 3 asbestos procedures in other sections of this document.



- 2.2.2 Follow the project architectural, electrical and mechanical drawings for specific locations of masonry wall, drywall or plaster walls are scheduled for removal. This includes column surrounds and shafts/risers.
- 2.2.3 Set up full type 2 enclosures from the floor to the deck on both sides of the wall where structural steel that has been resprayed with non-asbestos fireproofing is present.
- 2.2.4 Remove and dispose as asbestos waste enough block to completely access the structural steel behind/inside the block.
- 2.2.5 Seal the blocks or any openings below with poly to prevent any fall out of asbestos fireproofing.
- 2.2.6 Remove and dispose of any asbestos fireproofing that may be present on the structural steel.
- 2.2.7 Remove and dispose enclosure set-up upon completion of work.
- 2.2.8 Remaining sections of wall can be demolished as non-asbestos work.

2.3 Removal and Disposal of Asbestos-Containing Thermal Mechanical Insulation present on Plumbing Systems (Type 2/Glovebag)

- 2.3.1 In order to achieve the architectural, electrical and mechanical requirements of this project, this asbestos abatement scope sections includes removal and disposal of select asbestos-containing thermal mechanical insulation, as required under the current project drawings/scope, following Type 2 asbestos abatement procedures.
- 2.3.2 The locations include all those which are not covered in other sections of this scope.
- 2.3.3 NOTE: Asbestos insulation is present under the base of sink cabinets where foot water control valves are present, the base of the cabinet needs to be cut out inside a Type 2 asbestos enclosure before glove bagging the asbestos pipe insulation. This work is also to be included under this section.
- 2.3.4 The fitting counts and straight section counts provided below are for all locations under this section. The General Contractor shall have the counts confirmed by the consultants prior to beginning removal.
- 2.3.5 Remove and dispose asbestos-containing insulation on pipe straights and pipe fittings (including elbows, tees, bends, pipe tapers, pipe straights etc.) where required (any level of the building). Asbestos Type 2 glovebag removal procedures shall be followed. Type 2 procedures (with full enclosure) may be used at locations where glove bag removal is not possible provided the quantity of material to be removed is one square meter or less.
- 2.3.6 For the purpose of Base Bid consider a total of 300 linear meter of pipe straight section and 500 elbows, tees, bends, hangers, pipe tapers etc. with asbestos-containing insulation (located in different project areas) on less than 150mm diameter piping system.
- 2.3.7 For the purpose of Base Bid consider a total of 50 linear meter of pipe straight section and 100 elbows, tees, bends, hangers, pipe tapers etc. with asbestos-containing insulation (located in different project areas) on greater than 150mm but lesser than 300mm diameter piping system.



2.4 Type 2 Asbestos Enclosures (for work by electrical, mechanical or other trades) in areas with Asbestos-Containing Sprayed Fireproofing (Type 2)

- 2.4.1 This work is likely to be scheduled in various phases and multiple mobilizations and demobilizations are anticipated and the contractor should price accordingly.
- 2.4.2 The General Contractor is to determine exact locations, sizes, duration and all other schedule details (i.e. during the main abatement work or after) for this section of work.
- 2.4.3 Please follow the project architectural, electrical and mechanical drawings for specific locations and extent of all items described herein and should be referred to for any specialized notes or details. Any demolition work that may disturb asbestos-containing materials shall be performed by a qualified abatement contractor.
- 2.4.4 Work under this section includes any above ceiling inspections, mechanical work, electrical work or other work required in ceiling spaces or mechanical shafts by any trade on any level of the building where asbestos containing spray fireproofing is present.
- 2.4.5 Set-up type 2 asbestos enclosure/s (full enclosure and negative air pressure) at locations where above ceiling work is required in areas with asbestos-containing sprayed fireproofing. This includes work inside mechanical risers/shafts.
- 2.4.6 The General contractor to determine exact locations, sizes, duration and all other schedule details for such enclosures.
- 2.4.7 For entry and any work inside mechanical shafts and risers, the University of Toronto Standard Operating Procedures ID 0.10 and ID R2.10 (attached) shall be followed.
- 2.4.8 Remove, clean and save the ceiling tiles/grid.
- 2.4.9 HEPA vacuum debris from the ceiling and other surfaces within the enclosure/s (where applicable). **No power tools shall be used to remove fireproofing material.**
- 2.4.10 The abatement contractor shall maintain enclosure integrity while work by other trades is in progress inside the enclosure. Maintaining the enclosure/s, includes having at least one fully trained asbestos supervisor on site while the work is going on by other trades inside the type 2 enclosure. Any contamination of the surrounding area, from any cause, will be the responsibility of the asbestos sub-contractor.
- 2.4.11 In the event of work not being completed in one shift:
 - 2.4.11.1 Re-instate all ceiling tiles, grid etc. to original at the end of each work.
 - 2.4.11.2 Reinstall the fall protection on shaft walls at the end of each work
 - 2.4.11.3 Clean, lockdown, tear down and dispose the enclosure at the end of each work.
- 2.4.12 **For the purpose of pricing, please consider gross area not to exceed 2000 square meters** of all Type 2 enclosure/s to be constructed in single/multiple locations or floors and one time/multiple times. Each enclosure construction shall be considered individually for area measurement. Each enclosure shall be scheduled for a minimum of 8 hours work shift.
- 2.4.13 A 3rd party consultant or other designate staff to inspect and confirm area of all enclosure constructed under this section. No enclosure will be accepted for billing purposes unless inspected and measured before work begins.



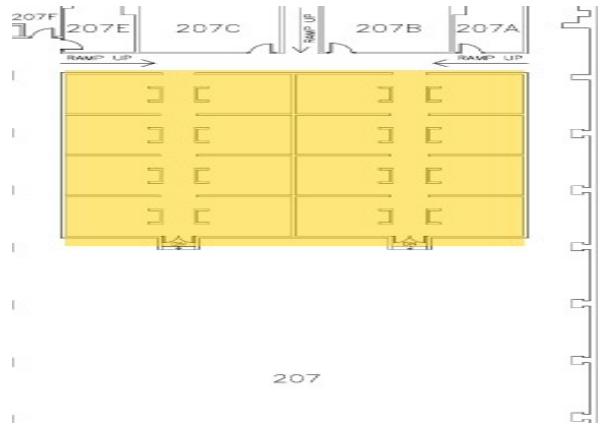
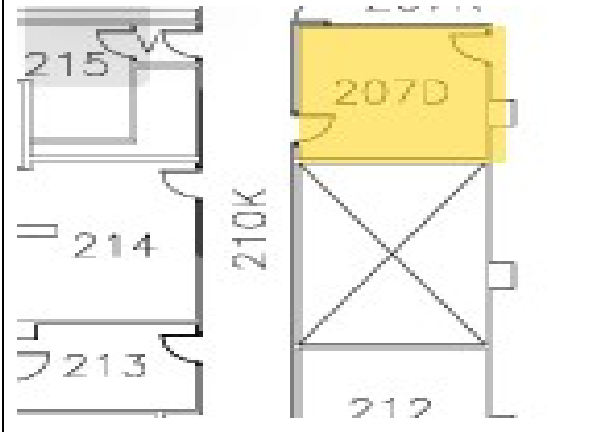
2.5 Type 1 Removal of Asbestos Cement Products (transite)

2.5.1 Remove and dispose of asbestos transite sheets present on heating unit within Room 126.

END OF SECTION 2.

3 **SECTION 3: LEAD ABATEMENT/PROCEDURES**

Lead lining is present on drywall walls, doors, door glass and computer style flooring (all walls, doors, glass and flooring in/on the elevated platform in the north end of Room 207) scheduled for removal under the current project.

	
Lead drywall walls, doors, glass and flooring in the north end of Room 207	Lead drywall in Room 207D

Lead drainpipes are present under the sinks scheduled for removal under the current project.

Laboratory analytical results for lead content in green ceramic tiles throughout the current project locations identify this material as Lead Containing Material ($\geq 0.1\%$ or $1000 \mu\text{g/g}$ or 1000PPM Lead Content). All other ceramic tiles present in the current project locations shall also be considered to contain Lead (any lead concentration).

All paint finishes on walls, structural components, windows, doors, bulkheads, baseboards, floors, ceilings, piping systems, ductwork, mechanical equipment and all other surfaces within the current project locations and other areas of the building should be assumed to contain lead (any lead concentration).

Work listed below involving all lead-containing materials or surfaces applied with lead paint (any concentration), required for the current project, is included in the scope of work including but are not limited to.

- Removal and disposal of lead lined drywall walls, doors, door glass and computer style flooring (all walls, doors, glass and flooring in/on the elevated platform in the north end of Room 207 and Room 207D) scheduled for removal on the project drawings.
- Removal and disposal of all ceramic tiles, grout and adhesive scheduled for removal on the project drawings.
- Work of removal and disposal of all lead drainpipes present under the sinks scheduled for removal on the project drawings.
- Removal and disposal of all loose, bubbling and peeling paint finishes within the current project locations.
- Sanding, grinding or any other disturbance or removal/disposal of lead-based materials or surfaces applied with lead paint.



- Grinding/disposal of lead-based paint on floor.
- Welding or high temperature cutting of lead-containing coatings or materials indoors.
- Abrasive-blasting of lead-containing coatings or materials.

Depending on the type of work to be conducted for the current project and the methodology selected by the contractor, the outlines provided for general measures, procedures and classification (or Type of operation) of lead containing materials disturbance shall be followed.

The General Contractor and their sub-contractors shall follow the requirements as identified in the Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict more stringent procedures shall apply

All bulk lead waste materials shall be separated from other wastes, where practicable, and sent to a recycling facility. If not practicable, lead-containing waste shall be handled and disposed of according to Ontario Regulation 347 (O. Reg. 347), "General - Waste Management", under the Environmental Protection Act. Under this regulation (and depending on the quantity of waste generated) the Toxicity Characteristic Leaching Procedure (TCLP) analysis shall be conducted to determine if the waste contains "leachate toxic waste" based on the leachate quality criteria provided in Schedule 4 of the regulation. Such wastes must meet specific treatment requirements (Schedule 5) or undergo alternative treatment for hazardous debris (Schedule 8) prior to land disposal.

END OF SECTION 3.



4 SECTION 4: SILICA ABATEMENT/PROCEDURES

Silica is present in various building materials within the current project areas and other locations of the building. Crystalline silica is the primary component of concrete, concrete block, cement, mortar, drywall etc. where scheduled for disturbance or demolition for the current renovation project.

For any work involving disturbance or removal of silica containing materials, the General Contractor and their sub-contractors shall follow work procedures and training requirements as identified in:

The Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

The classification, general measures and procedures (or Type of operations) required shall depend on the type of work to be conducted and the procedures adopted by the contractor. The following section outlines the classification of silica containing materials disturbance based on the guideline and procedures referred above.

Type 1 Operations

- Drilling of holes in concrete or rock that is not part of a tunneling operation or road construction.
- 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.

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 tunneling 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.
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.

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.

END OF SECTION 4.



5 SECTION 5: MERCURY ABATEMENT/PROCEDURES

For details of Mercury identified within the current project locations and the removal procedures/precautions please refer to the attached *MERCURY VAPOUR SPOT SAMPLING REPORT P065-21-50 Dentistry Clinic 2 – Faculty of Dentistry* by Safetech Environmental Ltd.

Mercury is identified in the drains present within the current project locations. Please refer to the attached “*U of T - Dentistry Building Clinical Laboratory 2 - Mercury Vapour Spot Sampling Report – January 2026*” by Safetech Environmental Ltd.

Removal and disposal of mercury is included in this scope. Follow removal procedures as specified in the above report.

END OF SECTION 5.



6 SECTION 6: GENERAL

- 6.1 In addition to this Scope of Work, the project shall be governed by the following. In the event of any conflict, most stringent shall apply.
- 6.1.1 Ontario Regulation 278/05, Occupational Health and Safety Act.
 - 6.1.2 University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
 - 6.1.3 Ontario Ministry of Labour Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/>
 - 6.1.4 University of Toronto Lead Management Program for Building Maintenance and Construction Projects Standard/Standard Operating Procedures for the Control of Lead, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
 - 6.1.5 Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/>
 - 6.1.6 University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>
- 6.2 All scaffold and/or other equipment assemblies in order to access work locations shall be in accordance with the standards required under applicable Acts and Regulations.
- 6.3 Rip-proof (orange) polyethylene sheet (6 mills thickness) shall be used for all enclosures and drop sheets.
- 6.4 All asbestos waste shall be placed into appropriate asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags shall be rip-proof Polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 6.5 Ventilation to and from the work area will remain shutdown during the work. However, the contractor will be required to temporarily seal all ventilation inlets and outlets.
- 6.6 Quality Control inspections and air monitoring will be performed by a consultant and University of Toronto staff throughout the project. Any contamination of surround areas indicated by visual inspection or air monitoring will require the complete enclosure and clean-up of the affected areas without any extra cost to the University of Toronto.
- 6.7 The contractor to protect against any damages to all electrical/mechanical systems, sprinklers, cables, conduits etc. during the execution of work.
- 6.8 All bagged and other normal construction waste disposal shall be done on dates and time coordinated with the Project Manager. Bin location will be the loading\receiving area of the building. The bin cannot stay for any length of time. Waste shall be stored on site unless sufficient quantity accumulates. The bin shall be dropped off late evening and removed by early next morning.



6.9 Isolation/Installation Responsibilities:

<u>Item</u>	<u>Responsibility</u>
6.9.1 Electrical shutdowns	Arranged by Project Manager
6.9.2 Electrical panel/cable supply	Contractor
6.9.3 Electrical isolation & temporary panel installation	Contractor
6.9.4 Provide plumbing connections mains for hot and cold water	Arranged by Project Manager
6.9.5 Hoses for water supply	Contractor
6.9.6 Ventilation shutdowns	Arranged by Project Manager
6.9.7 Ductwork capping	Contractor
6.9.8 Duct lowering to access Fireproofing (if required)	Contractor
6.9.9 Isolation of sprinklers, heat detectors	Arranged by Project Manager
6.9.10 Type 3 enclosure air clearance tests	Arranged by Project Manager
6.9.11 Fireproofing re-spray tests for confirmation of thickness and density	Arranged by Project Manager

END OF SECTION 6.



7 SECTION 7: ATTACHMENTS

The following documents are attached to this scope and should be considered part of the bid documents:

- 7.1 Fireproofing re-spray specifications.
- 7.2 Temporary electrical panel specifications.
- 7.3 University of Toronto Standard Operating Procedures.
- 7.4 U of T - Dentistry Building Clinical Laboratory 2 - Mercury Vapour Spot Sampling Report – January 2026” by Safetech Environmental Ltd.

END OF DOCUMENT

PART 1 - GENERAL

1.1 **GENERAL REQUIREMENTS**

1.1.1 Read and conform to:

1.1.1.1 The General Conditions of the Contract.

1.1.1.2 Conform to Sections of Division 1 as applicable.

1.2 **RELATED SECTIONS**

1.2.1 Existing Structural Steel: refer to site condition of existing steel.

1.3 **REFERENCES**

- | | | |
|--------|-----------|--|
| 1.3.1 | ASTM E72 | - Test Methods of Conducting Strength Test of Panels for Building Construction |
| 1.3.2 | ASTM E84 | - Test Method for Surface Burning Characteristics of Building Materials |
| 1.3.3 | ASTM E119 | - Test Methods for Fire Tests of Building Construction and Materials |
| 1.3.4 | ASTM E605 | - Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members |
| 1.3.5 | ASTM E736 | - Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members |
| 1.3.6 | ASTM E759 | - Test Method for Effect of Deflection of Sprayed Fire-Resistive Material Applied to Structural Members |
| 1.3.7 | ASTM E761 | - Test Method for Compressive Strength of Sprayed Fire-Resistive Materials Applied to Structural Members |
| 1.3.8 | ASTM E859 | - Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members |
| 1.3.9 | ASTM E937 | - Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members |
| 1.3.10 | OBC | - Ontario Building Code |

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- | | | |
|--------|-----------------|--|
| 1.3.11 | CAN/CGSB-71.20 | - Adhesive, Contact, Brushable |
| 1.3.12 | CSA O112 Series | - CSA Standards for Wood Adhesives |
| 1.3.13 | CAN/ULC-S101 | - Standard Methods of Fire Endurance Tests of Building Construction and Materials |
| 1.3.14 | CAN/ULC-S102 | - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies |
| 1.3.15 | ULC | - Underwriters= Laboratories of Canada |
| 1.3.16 | WH | - Warnock Hersey |
- 1.4 **SUBMITTALS**
- 1.4.1 Certificates:
- 1.4.1.1 Submit applicator's certification that spray fireproofing has been applied in accordance with ULC or WH Designs specified.
- 1.4.1.2 Submit test results in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.
- 1.4.2 Submit product information. Brand names and descriptive catalogue data of proposed products.
- 1.4.2.1 Include complete test report in cases where references are not published by testing laboratories, and where authority having jurisdiction has approved significant changes from tested assembly on basis of an engineering study; study calculations shall accompany report.
- 1.4.2.2 Where sprayed fireproofing is scheduled to be applied directly over existing primed surfaces as found after removal of existing asbestos containing spray fire proof coating, or where contact is made with primed surfaces, submit written description and explanation of proposed method of preparation and application and submit letter from manufacturer of fireproofing signifying compatibility between all contact materials as per the proposed method of application.
- 1.5 **QUALITY ASSURANCE**
- 1.5.1 Qualification: Applicators shall be licensed, skilled in work of this trade and supervised by manufacturer of sprayed fireproofing materials using equipment approved by manufacturer.
- 1.5.2 Materials and applied systems shall have full acceptance by authorities having jurisdiction. Minimum acceptable standards to which sprayed fireproofing shall conform are OBC, Subsection "Fire Resistance Rating" and ASTM E72, ASTM E84 and ASTM E119.

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- 1.5.3 Minimum acceptable physical performance standards are those stated herein. Materials having higher performance standards are not precluded from submission or acceptance.
- 1.5.4 Regulatory Requirements: Conform to ULC providing restrained or unrestrained fire rating as scheduled to suit design requirements.
- 1.6 **DELIVERY, STORAGE AND HANDLING**
- 1.6.1 Store materials in dry, protected area, off ground in original undamaged, sealed containers. Discard any bags or containers that have been exposed to water before use.
- 1.6.2 Deliver sprayed fireproofing materials in original unopened containers bearing manufacturer's name, brand of product, certification labels for fire hazard and fire resistance classifications (ULC or WH labels).
- 1.7 **PROJECT CONDITIONS**
- 1.7.1 Environmental Requirements:
- 1.7.1.1 Maintain air and substrate temperature of 5 deg C (40 deg F) for 24 hours prior to installation, during and for a minimum of 24 hours after application of materials. Provide heated enclosures to maintain temperatures.
- 1.7.1.2 Provide adequate air circulation and exhaust to outdoors to achieve total air exchange rate of 4 times per hour until material is substantially dry.
- 1.8 **PROTECTION**
- 1.8.1 Precautions for Safe Handling and Use
- 1.8.1.1 Sweep up and place in disposal containers if material is accidentally released or spilled. Avoid inhalation of dust.
- 1.8.1.2 Use approved landfill site for waste disposal.
- 1.8.1.3 During handling and storing avoid inhalation of dust and skin and eye contact.
- 1.8.1.4 In case of accidental contact, use normal personal hygienic methods to remove contaminants.
- 1.8.2 Control Measures:
- 1.8.2.1 Respiratory Protection from Dust: Use NIOSH 21-Cxx approved dust mask for cementitious fireproofing application and NIOSH approved respirators with high efficiency (HEPA) cartridge filters for mineral fibre fireproofing application.
- 1.8.2.2 Ventilation: Provide sufficient air supply to maintain dust levels below TLV.

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- 1.8.2.3 Eye Protection: Wear dust goggles.
- 1.8.2.4 Protective Equipment: Wear loose fitting long sleeve shirt and pants when handling fireproofing materials.
- 1.8.3 Protect during installation any adjacent finished surfaces from contamination and damage due to work under this Section.
- 1.8.4 Protect completed work, vulnerable corners, edges and surfaces liable to be damaged due to construction activities. Provide wood cover strips and sheet material as required to prevent damage.
- 1.8.5 Method and materials to effect protection are subject to review by University.
- 1.9 **WARRANTY**
- 1.9.1 Warrant work of this Section against defects and deficiencies for period of 5 years in accordance Contractor hereby warrants that the sprayed fireproofing shall remain free of defects in materials and quality of work in accordance with General Conditions of the Contract. Promptly correct defects and deficiencies which become apparent within warranty period to satisfaction of University and at no additional cost to University. Defects shall include but not limited to flaking, delamination, fibre loss, crazing and cracking or evidence of other defects of finish. Performance failure of any component of sprayed fireproofing system; defective work shall be removed and replaced with acceptable work at no cost to University and at such times as designated by University.

PART 2 -**PRODUCTS****2.1 MATERIALS****2.1.1 Fireproofing Materials**

- 2.1.1.1 Gypsum based cementitious materials with synthetic or organic aggregates; containing factory added mold inhibitors to prevent growth of organisms and fungi and blue coloured dye to differentiate the fireproofing material by this contract from existing asbestos containing fireproofing materials; listed in specified ULC or WH design, providing fire rating specified and meeting physical performance characteristics as specified.
- 2.1.2 Materials shall be certified as fire resistant by ULC or WH in accordance with CAN/ULC-S101 or ASTM E119, and shall be asbestos free.
- 2.1.3 Materials shall not induce deterioration of members to which they are applied.
- 2.1.4 Bonding agents, binders, accessories, cleaning solvents, aggregates and sealers shall be in accordance with base material manufacturer's recommendation.
- 2.1.5 Mixing water shall be clear and free from injurious amounts of oil, acid, alkali, organic matter, sediment or any other deleterious or stain-producing substances.

- 2.1.6 Expanded Metal Lath: In sheet sizes of 27" x 96" from galvanized, copper alloy steel sheets. Use 3/8" rib lath at 3.0 lb/yd⁵.
- 2.1.6.1 Gypsum Based Cementitious Type 1: "Monokote Type MK-6/CBF" manufactured by Construction Products Division, W.R. Grace & Co. of Canada Ltd., or "CAFCO 300" by Cafco Industries Inc., or A/D Type 5MD Double by A/D Distributors Ltd. similar type meeting performance criteria specified herein and approved by University.
- 2.1.6.2 Water shall be clean, potable and free of any deleterious substances harmful to fireproofing material.
- 2.1.7 Sealer: Type recommended by fireproofing manufacturer, qualified for use in ULC or WH Design specified or indicated.
- 2.1.8 Physical Performance Characteristics
- 2.1.8.1 Type 1 Gypsum Based Cementitious

Characteristics	ASTM Tests References	Required Results
Bond Strength	E736	200 psf
Corrosion	E937	Pass
Density	E605	15 PCF
Compressive Strength	E761	12.6 PSI
Air Erosion	E859	0.000 G/SF
Deflection	E759	Pass

2.2 MIXES

- 2.2.1 Mix sprayed fireproofing materials as recommended by manufacturer.
- 2.2.2 Do not use partially set, frozen, caked or lumpy materials. Mix each batch separately in mechanical mixer and clean mixer free of particles before mixing new batch.

PART 3 -

EXECUTION

3.1 EXAMINATION

- 3.1.1 Examine surfaces to receive sprayed fireproofing and report to University any defects. Commencement of work implies acceptance of surfaces and conditions.
- 3.1.2 Ensure that ducts, pipe, conduit and other items which would interfere with application of sprayed fireproofing, have not been installed until sprayed fireproofing work is completed.
- 3.1.3 Do not apply fireproofing until all clips, hangers, inserts, sleeves and similar items have been installed in areas to receive sprayed fireproofing.

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- 3.1.4 Ensure that painted surfaces to receive sprayed fireproofing are compatible with fireproofing materials and bond requirements. Follow Preparation specified in Paragraph 3.2 PREPARATION.
- 3.1.5 Do not commence application of fireproofing prior to completion of concrete work on steel decking.
- 3.1.6 Do not commence application of fireproofing prior to completion of roofing application and roof traffic has ceased.
- 3.2 **PREPARATION**
- 3.2.1 Protection
- 3.2.1.1 Provide temporary enclosures and masking to prevent spray from contaminating adjacent areas and surfaces.
- 3.2.1.2 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of sprayed fireproofing materials.
- 3.2.2 Surface Preparation: Clean surfaces free of dust, dirt, oil, grease, loose paint, mill scale and other foreign matter which would interfere with bond of fireproofing. Ensure surfaces to be sprayed are dry and reviewed by University before spraying.
- 3.2.3 Painted surfaces to receive sprayed fireproofing shall have expanded metal lathe mechanically fastened to it in compliance with "ULC BXUVC.GuidelInfo Fire Resistance Ratings, New Requirements for the Use of Sprayed-Applied Fire-Resistive Materials on Primed Steel Surfaces Effective date for the revised clarifications is January 01, 2009" and bond requirements.
- 3.3 **APPLICATION**
- 3.3.1 Apply fireproofing according to manufacturer's printed instruction, to required ULC or WH Design numbers to achieve 2 Hour Fire Resistive Rating to the structural steel and using spray equipment approved by manufacturer of fireproofing.
- 3.3.2 Apply fireproofing to required total thickness and density.
- 3.3.3 Apply sprayed fireproofing in accordance with manufacturer's recommendation and to ULC or WH Designs requirements to suit design requirements for restrained and unrestrained conditions and as indicated on Drawings to achieve required ratings.
- 3.3.4 Water tamp fibrous fireproofing after application to provide dense, medium smooth surfaces.
- 3.3.5 Board tamp fibrous fireproofing when use in high velocity plenum and in vertical contact areas (i.e. columns in Mechanical Room) to provide additional surface protection.

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- 3.3.6 Do all cutting, patching and repairing of damage caused by work of this Section or of unsatisfactory fireproofing as directed. Repair areas cut out or damaged as result of testing.
- 3.3.7 Except as provided above, repair damaged spray fireproofing at expense of those causing damage. Do all repairs before fireproofing concealed, or if exposed, before final inspection.
- 3.3.8 After application clean off any overspray and broom clean floor.

3.4 INSPECTION AND TESTING

- 3.4.1 Carry out tests required by authorities having jurisdiction.
- 3.4.2 University will appoint independent inspection and testing company as specified in Section 01410 Inspection and Testing Requirements.
- 3.4.3 Inspector will perform following tests:
- 3.4.3.1 Thickness: 2 tests in each area on beams and columns. Each test consisting of 4 measurements and average of 4 tests reported.
- 3.4.3.2 Density: 2 tests in each area on beams and columns. For purpose of test remove size and area portion of spray material from backing in compliance to Testing Standards as listed herein, dry to constant weight, measure and weigh. Calculate density in kg/m^3 (lb/cu ft).
- 3.4.4 The spray-applied fire resistive material shall be tested for thickness and density in accordance with one of the following procedures:
- 3.4.4.1 ASTM E605 - Standard Test Method for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members.
- 3.4.4.2 AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.

3.5 REPAIRS

- 3.5.1 Where installed materials are found not to meet performance criteria, remove material and replace with new material to meet specified criteria.

END OF SECTION



Asbestos Abatement Temporary Power Requirements:

Wet Locations:

1. To supply power to temporary electrical panel the capacity of the power source shall be verified prior to the connection of the temporary panel.
2. Any live buses/ parts of the panelboards shall not be exposed and accessible.
3. All temporary panels shall be fed with mechanically protected weatherproof cables such as tek cable or wiring in seal tight conduit complete with weatherproof connectors.
4. Temporary Electrical Panels shall be weatherproof, complete with drip shields.
5. Seal Temporary Electrical panels to avoid any possibility of water migration, this shall include any unused knockouts or mounting openings.
6. All receptacles shall be ground fault interrupter receptacles or protected by ground fault circuit interrupter breakers.
7. All receptacles shall be installed in weatherproof boxes.
8. All connections from receptacles to panel shall be in conduit complete with weatherproof connectors or liquid tight flexible conduit complete with weatherproof connectors.
9. All installations shall have a means of disconnection of power in case of emergency.
10. All Electrical work must be performed by members of the International Brotherhood of Electrical Workers, Local 353.
11. All Electrical work shall comply with the latest edition of the Ontario Electrical Safety Code, Ontario Building Code and applicable C.S.A. and U.L.C. Standards. Ontario Electrical Safety Authority inspection shall be applied and paid for by this Contractor. Provide certificate prior to final acceptance of the work.
12. All Electrical power supply interruptions shall be arranged with the U of T construction Supervisor at least 10 working days in advance and shall be carried out only outside normal working hours.

Dry Locations:

1. To supply power to temporary electrical panel the capacity of the power source shall be verified prior to the connection of the temporary panel.
2. Any live buses/ parts of the panelboards shall not be exposed and accessible.
3. All temporary panels shall be fed with mechanically protected weatherproof cables such as tek cable or wiring in seal tight conduit.
4. All receptacles shall be ground fault interrupter receptacles or protected by ground fault circuit interrupter breakers.
5. All installations shall have a means of disconnection of power in case of emergency.
6. All Electrical work must be performed by members of the International Brotherhood of Electrical Workers, Local 353.
7. All Electrical work shall comply with the latest edition of the Ontario Electrical Safety Code, Ontario Building Code and applicable C.S.A. and U.L.C. Standards. Ontario Electrical Safety Authority inspection shall be applied and paid for by this Contractor. Provide certificate prior to final acceptance of the work.
8. All Electrical power supply interruptions shall be arranged with the U of T construction Supervisor at least 10 working days in advance and shall be carried out only outside normal working hours.



Office of Environmental Health and Safety
UNIVERSITY OF TORONTO

Standard Operating Procedures
for the Control of Asbestos Fibres
During Non-Asbestos Work in Chases (Shafts)

ID 0.10

**ENTRY INTO MECHANICAL CHASES (SHAFTS)
IN BUILDINGS WITH ASBESTOS-CONTAINING SPRAYED FIREPROOFING**

This section addresses entry and non-asbestos work performed in mechanical chases where asbestos-containing sprayed fireproofing is exposed and present, and where overspray may be present on horizontal and vertical surfaces. If there is damaged asbestos material, report to your supervisor and contact Facilities and Services, Hazardous Construction Materials Group (HCMG) for repair/clean-up. Do not proceed with work until repair/clean-up has been completed.

1.0 APPLICATION

1.1 Certain work activities can be performed by entering into these chases without the requirement for asbestos precautions as long as no asbestos material is being disturbed or damaged. These activities are:

- Entry into and moving through the chase.
- Turning valves, switches, work on electrical panels/equipment etc. if not contaminated with asbestos.
- Inspection, checking metres, reading instruments etc.
- Work on shaft doors and associated locks where no asbestos contamination or materials are present*.

When performing the above, do not disturb any asbestos material, including sprayed fireproofing or overspray on structure and cross bracing. It should be noted that storing items in these spaces is discouraged.

1.2 General reminders:

- Prior to walking in the area and before beginning work, conduct a quick visual inspection. Report any fallen debris/potential sprayed asbestos fireproofing to your supervisor and arrange for clean up following asbestos procedures prior to continuing work.
- Before starting work, inspect the equipment you will be working on (e.g. electrical panel, conduit, cable, valve, switch, etc.) and whether there is any potential for disturbing asbestos. Be aware of working close to the ceiling where asbestos sprayed fireproofing may be present and be accidentally disturbed during the work. Follow appropriate Type 2 procedures if there is potential for disturbance. Speak to your supervisor if you have any concerns.

1.3 Any "work" in a mechanical chase, not described above, is considered asbestos disturbance and Type 2 or 3 procedures, as outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act, must be followed.

1.4 Removal or disturbance of less than 1 square metre of friable material is a Type 2 Procedure. Please refer to U of T SOP ID R2.10 for detailed instructions on the appropriate procedure to follow. The requirements of SOP ID R2.10 apply except for the requirement for an enclosure.

1.5 Removal or disturbance of more than 1 square metre of friable material is a Type 3 Procedure. Type 3 asbestos work requires additional training and is conducted by external asbestos contractors only. Contact HCMG if Type 3 work is required.

1.6 *For fire-rated doors with friable asbestos-containing core materials, the door itself contains asbestos; refer to SOP R1.50 or SOP 2.50 where applicable and appropriate.



Office of Environmental Health and Safety
UNIVERSITY OF TORONTO

Standard Operating Procedures
for the Control of Asbestos Fibres
During Type 2 Operations

ID R2.10

MINOR FRIABLE ASBESTOS REMOVAL

The exposure of workers and the corresponding measures and procedures for the minor disturbance of friable asbestos are classified as Type 2.

When authorized workers conduct Type 2 activities involving the minor disturbance of friable asbestos, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the requirements outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

1.0 APPLICATION

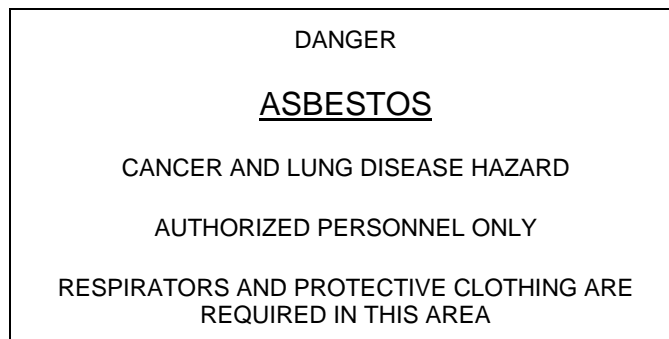
- 1.1 These procedures apply to all work involving the minor removal of friable asbestos-containing material; this activity may generate enough airborne asbestos to require protective equipment, but is of short duration..
- 1.2 Minor removal of material containing asbestos means the removal of **one square meter or less of wet friable material**, including mechanical insulation, sprayed fireproofing and texture plaster. The length of insulated pipe corresponding to the maximum allowable one square metre (10.76 square feet) of insulation may be determined by the following equation:
 - 1.2.1 $\text{Area (outer surface of insulated pipe in sq. ft.)} = \text{Length (of insulated pipe in ft.)} \times 2\pi R$ (or $2 \times 3.14 \times R$ where R = Radius of pipe and insulation).
- 1.3 Work on friable asbestos-containing material is classified according to the total area on which work is done consecutively in a room or enclosed area, even if the work is divided into smaller jobs. O. Reg. 278/05, s. 12 (5). Therefore a project that would be a Type 3 project (removal of more than 1 square metre in a room or area) cannot be broken into smaller amounts in order to be done as a series of Type 2 projects.

2.0 DEFINITIONS

- 2.1 *Work Areas:* Where actual work activity involving asbestos takes place.
- 2.2 *Enclosure:* An impermeable barrier made of rip-proof polyethylene plastic or similar material, inside which the asbestos activity takes place.
- 2.3 *Damp Wiping:* A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

3.0 **MATERIALS AND EQUIPMENT**

- 3.1 *HEPA Vacuum:* Vacuum cleaner equipped with a High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 *Dropsheet:* Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.3 *Encapsulant (Sealer):* Bonding agent or sealant which can be applied as a liquid and controls the release of fibres or dust from the surface.
- 3.4 *Amended Water:* A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.
- 3.5 *Sprayer:* Sprayer with mist nozzle for application of amended water or sealant.
- 3.6 *Asbestos Waste Receptacles:* Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.
- 3.7 *Small Tools:* Sponge(s), bucket(s), ladder, etc.
- 3.8 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene bags.
- 3.9 *Respirator:* See section 5 Personal Protective Equipment.
- 3.10 *Coveralls:* Full body disposable clothing of an appropriate size with attached hood. It should be elasticized at the cuffs and hood, and be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.11 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.12 *Signage:* Warning of asbestos hazard in the work area. An example is shown below.



4.0 **NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities involving friable asbestos. The following methods of communication apply:

- 4.1 The notification is to include a description of the planned Type 2 activity, its proposed duration, and in general terms the precautionary measures required to maintain a safe work environment. This information is to be provided to the following parties.

- 4.1.1 All appropriate Directors (St. George, UTM, UTSC, Capital Projects)
- 4.1.2 Manager, Environmental Hazards and Safety (St. George only)
- 4.1.3 Director, Environmental Health and Safety
- 4.1.4 Co-chairs of both the Trades and the Utilities Joint Health and Safety Committees
- 4.1.5 Co-chairs, Local Joint Health and Safety Committee
- 4.1.6 Local Area Occupants
- 4.2 Signage at Work Location
- 4.2.1 This sign informs building users of the asbestos-related work being conducted at that work location and that entry into the area is restricted to authorized personnel only. Signs are to be posted in the work area in sufficient numbers to warn of the hazard.

5.0 PERSONAL PROTECTION

- 5.1 *Respirators:* Workers are required to don respirators when performing Type 2 work. The following shall apply:
 - 5.1.1 All respiratory equipment shall be individually assigned and identified.
 - 5.1.2 Each worker must attend respiratory protection training and be fit tested prior to beginning work.
 - 5.1.3 Workers shall wear at least a half facepiece respirator fitted with purple HEPA (P100) filters.
 - 5.1.4 Disposable single-use type respirators are not permitted.
 - 5.1.5 All respirators shall be approved and labelled for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
 - 5.1.6 Replace filter cartridges as appropriate (36 hours of use or more frequently). Dispose of used cartridges as asbestos waste.
 - 5.1.7 No supervisor or worker shall have facial hair which affects respirator-to-face seal.
- 5.2 *Protective Clothing:* All workers must be provided with full body disposable coverall and shoe covers as described in Section 3.
- 5.3 *Facilities:* Provide facilities for washing hands and face which shall be used by every worker when leaving asbestos work areas.
- 5.4 *Practice:* Workers shall not eat, drink, smoke or chew while in work areas.
- 5.5 *Work Area Entry:* All persons shall wear respirators with HEPA (P100) filters and clean coveralls before entering work area.
- 5.6 *Work Area Exit:* Before leaving the Work Area and still wearing a respirator, a worker shall:
 - 5.6.1 Thoroughly HEPA vacuum protective clothing, respirator and footwear.
 - 5.6.2 Remove decontaminated coveralls and wash hands and face with water (in Work Area).
 - 5.6.3 Leave the Work Area in street clothes and proceed to the nearest washroom to wash hands and face.
 - 5.6.4 Coveralls may be reused throughout a day provided they are disposed of after each shift, and left inside the Work Area after each use.
 - 5.6.5 Thoroughly clean respirator.

6.0 PREPARATION – WORK AREAS

- 6.1 Clear immediate work areas of all moveable furnishings or equipment. Any furnishings or equipment not removed shall be adequately covered and sealed using polyethylene and duct tape.
- 6.2 Remove any friable material containing asbestos and any visible dust that is likely to be disturbed and that is lying on any surface in the vicinity of the work area by HEPA vacuuming or damp wiping.

- 6.3 Provide a temporary enclosure to prevent the spread of airborne dust from the work area. The enclosure shall be as airtight as conditions permit including the provision of a double overlapping flap at the entrance.
- 6.4 Post signs warning of asbestos hazard at the entrances to the work area.
- 6.5 Shut down all ventilation to and from the work area. Seal and tape all ventilation openings within the work area with polyethylene sheeting.
- 6.6 Locate HEPA vacuum body outside enclosure. Locate vacuum hose within enclosure to provide negative pressure effect in enclosure.
- 6.7 Don respiratory equipment, coveralls and shoe covers as describe in Section 5.

7.0 EXECUTION

- 7.1 Use only hand-held non-powered tools. Do not use compressed air.
- 7.2 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.3 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material.
- 7.4 Remove asbestos-containing thermal insulations in layers, maintaining all exposed surfaces of insulation in a wet condition.
 - 7.4.1 Seal exposed ends of asbestos-containing pipe insulation with 6 oz. canvas and lagging.
- 7.5 Remove asbestos-containing sprayed materials by scraping wetted ACM directly into waste containers. Do not allow ACM to fall to the floor of the enclosure.
- 7.6 Clean all surfaces from which ACM has been removed with scouring pads, vacuuming or wet-sponging to remove all visible material after completion of removal of ACM.
- 7.7 Carefully remove the asbestos material and place in an asbestos waste receptacle; double bag all waste as described in the Waste Transport and Disposal Section below and HEPA vacuum or damp-wipe the second container immediately prior to passing it out of the work area.
- 7.8 Seal the surfaces from which asbestos-containing material has been removed with a coat of encapsulant (sealer).
- 7.9 Frequently and at regular intervals during the work and immediately upon completion of the work, remove dust and waste from the workplace by HEPA vacuuming or damp-wiping, mopping or wet sweeping.
- 7.10 On completion of work, HEPA vacuum and wet clean all surfaces inside enclosure. Clean all reusable tools and pass out of enclosure. Clean framing for enclosure, plywood, etc. that will be reused and spray with encapsulant (sealer).
- 7.11 When removing enclosure, all polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste.

8.0 WASTE TRANSPORT AND DISPOSAL

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 *For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-

container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.

MERCURY VAPOUR SPOT SAMPLING REPORT

P065-21-50

Dentistry Clinic 2 – Faculty of Dentistry
124 Edward Street
Toronto, Ontario

Prepared for:

Adryanne Quenneville, M.Arch, OAA
Project Manager

University of Toronto, University Planning, Design & Construction
255 McCaul Street, 4th Floor
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Safetech Project Number 1-5250609

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Appendix A
Appendix B

Site Photographs
Certificate of Calibration

January 16, 2026

University of Toronto, University Planning, Design & Construction
255 McCaul Street, 4th Floor
Toronto, Ontario
M5T 1W7

Attention: Adryanne Quenneville, M.Arch, OAA
Project Manager

Re: Mercury Vapour Spot Sampling Report
P065-21-50: Dentistry Clinic 2 – Faculty of Dentistry
124 Edward Street, Toronto, Ontario

1.0 BACKGROUND

On December 22nd, 2025, personnel from Safetech Environmental Limited (Safetech) conducted instantaneous spot testing for mercury vapours within Dentistry Clinic 2 on the 2nd floor of The Faculty of Dentistry Building located at 124 Edward Street, Toronto, Ontario.

Our assessment was performed at the request of Adryanne Quenneville, Project Manager for the University of Toronto in order to determine potential concentrations of mercury vapours (if any) within all areas where sink fixtures and associated drains are present where scheduled renovations are expected to be performed.

The main objective of our assessment was to determine if there was a likelihood of any overexposure to mercury vapours as a result of past use/accidental release of elemental mercury as a preventative measure prior to the onset of upcoming demolition/renovation activities within the areas investigated. Our assessment consisted of a visual assessment within the investigated areas to identify any visible mercury residues on building surfaces primarily near sinks. In addition, spot sampling for mercury vapours was conducted areas where sink fixtures, lab drains, and floor drains were present in areas scheduled for renovation using direct reading instrumentation to further determine if there were any significant sources of mercury and for comparison with regulated occupational exposure limits.

2.0 REGULATED EXPOSURE LIMITS

In Ontario, mercury is classified as a designated substance. A designated substance is defined as a biological, chemical or physical agent or combination of agents for which a regulation has been made to prohibit, regulate, restrict, limit or control worker exposure. The designated substances regulation applies to a class of agents and sets out requirements governing exposure limits, use of respirators, air monitoring, medical surveillance and record keeping. These regulations apply to employers and workers at workplaces where the designated substance is present, produced, processed, used, handled, or stored in the workplace and where a worker is likely to inhale, ingest or absorb some quantity of the contaminant. Ontario Regulation 490/09 entitled “Designated Substances”, as most recently amended by O.Reg. 259/10 and made under the Occupational Health and Safety Act (R.R.O. 1990, Reg. 843) governs the acceptable exposure and precautionary requirements of 11 designated substances including mercury.

2.1 Mercury in Air

For provincially regulated industrial facilities in Ontario, exposure to mercury vapours is regulated as a designated substance under Ontario Regulation 490/09. This regulation indicates a time-weighted average (TWA) exposure limit of 0.025 mg/m³ (or 25 µg/m³) for all forms of mercury (including elemental mercury) except for alkyl compounds.

The TWA is a contaminant concentration considered acceptable for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse health effects. The STEL is the maximum airborne concentration of a chemical agent to which a worker may be exposed in any 15-minute period, no more than four times a day during an 8-hour work shift and with at least one hour between exposures. The C is the maximum airborne concentration of a chemical agent to which a worker may be exposed at any time. If neither a STEL nor a C exists, peak exposure values based on the TWA should be applied. These limits indicate that exposure may exceed 3 times the TWA for no more than fifteen minutes at a time, but under no circumstances can exposure exceed 5 times the TWA when measured as a 15-minute exposure limit.

As indicated, exposure limits provided in Ontario Regulation 490/09 have been developed to protect workers in industrial environments. They are intended to protect against the onset of specific illnesses or health effects and in many instances are not intended to protect against irritation or to limit odours. In addition, the limits are intended to protect “healthy workers.” Individuals having pre-existing medical conditions, severe allergies, chemical sensitivities and other such conditions would not be expected to work in a manufacturing environment. However, these individuals may work in non-industrial settings such as commercial, institutional and residential environments. For

these reasons, exposure limits provided in Ontario Regulation 490/09 are considered to have limited applicability for an institutional facility during normal daily operations, but would be applicable for workers on demolition projects.

3.0 METHODOLOGY

Our assessment was conducted in the designated space for all main sink fixtures (where present). Our investigation included a visual assessment and spot sampling for mercury vapours.

3.1 Visual Assessments

A visual walkthrough inspection of the above noted rooms was performed to identify conditions present at the time of our assessment. The intent of the walkthrough inspection was to acquire an overview of building layout, and to look for potential sources of mercury release or evidence of visible mercury residues on building surfaces. The inspection identified typical building materials, furnishings and equipment present on which mercury residues may be present. Particular attention was given to areas where sink fixtures or drains were located.

3.2 Spot Sampling for Mercury Vapours

Instantaneous spot sampling for mercury vapours was conducted concurrently with our visual inspection to obtain measurements of the airborne concentration of mercury vapour at a given moment in time. These measurements were taken from each sink drain located within the above noted rooms scheduled to undergo upcoming renovation activities.

Direct readings were obtained using a portable Jerome 431-X Mercury Vapour Analyzer (Jerome). This portable device is designed to measure mercury vapours in real time and has an operating range of 0.003 mg/m³ to 0.999 mg/m³. The device was operated in "Sample Mode", in which discrete 12-second air samples were taken at each sampling location to obtain a measurement of the mercury concentration with an accuracy of $\pm 5\%$ at 0.1 mg/m³.

4.0 RESULTS

4.1 Visual Assessments

The clinic was equipped with multiple dentistry stations with sinks along the east and west walls. Two x-ray areas were found to be divided into eight rooms in each area with sinks along the north and south walls of each room. Our visual inspection conducted at the time of testing did not identify any obvious visible evidence of mercury residues on flooring finishes, counter spaces (where present), equipment or other surfaces.

Sink fixtures were not identified to have glass sink traps, and therefore only a limited visual inspection could be carried out. Minor areas of dust and debris accumulation were identified on horizontal surfaces, primarily flooring underneath sinks and within sink fixture cabinetry, appearing to be present on surfaces that less likely to be frequently cleaned.

4.2 Spot Sampling for Mercury Vapours

Spot sampling for mercury using the Jerome analyzer was conducted in all main sink drains located within Dentistry Clinic 2. Results of instantaneous screening for mercury vapours using the Jerome analyzer are summarized below in Table I.

TABLE 1
Summary of Mercury Vapour Spot Sampling Results
Dentistry Clinic 2 – Faculty of Dentistry
University of Toronto
December 22, 2025

Location	Fixture	Concentration (mg/m ³)
Occupational Exposure Limit (O. Reg 490/09): 0.025 mg/m³		
Dentistry Clinic 2		
By Doffing station	Sink	<0.003
	Sink Cabinet Interior	0.003
By Room 207 D	Sink	0.005
	Sink Cabinet Interior	<0.003
By Dental Chair 243	Sink	0.004
	Sink Cabinet Interior	0.000
By Dental Chair 249	Sink	0.011
	Sink Cabinet Interior	<0.003
By Room 266A	Sink	0.019
	Sink Cabinet Interior	0.011

By Room 208	Sink	0.008
	Sink Cabinet Interior	0.005
By Dental Chair 278	Sink	0.007
	Sink Cabinet Interior	<0.003
By Dental Chair 272	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 260	Sink #6	<0.003
	Sink #6 Cabinet Interior	<0.003
By Dental Chair 254	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 248	Sink #5	<0.003
	Sink #5 Cabinet Interior	<0.003
By Dental Chair 242	Sink #4	0.003
	Sink #4 Cabinet Interior	<0.003
By Dental Chair 230	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 224	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 218	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 206	Sink	<0.003
	Sink Cabinet Interior	<0.003
Sink #1	Sink	<0.003
	Sink Cabinet Interior	<0.003
Mixed Solutions Counter	Sink	<0.003
	Sink Cabinet Interior	<0.003
By purple prosthodontic sign	Sink	<0.003
	Sink Cabinet Interior	<0.003
By instrument cleaning area	Sink	<0.003
	Sink Cabinet Interior	<0.003
North of instrument cleaning area	Sink	<0.003
	Sink Cabinet Interior	<0.003
NE eyewash station	Sink	<0.003
	Sink Cabinet Interior	<0.003
By NE Exit	Sink	<0.003
	Sink Cabinet Interior	<0.003
Room 207A	Sink	0.003
	Sink Cabinet Interior	<0.003

Room 207B	Sink	<0.003
	Sink Cabinet Interior	0.003
Room 225	Sink	<0.003
	Sink Cabinet Interior	0.003
	Fume Hood Interior	<0.003
	Fume Hood Cabinet	<0.003
	Fume Hood Exterior	<0.003
Room 224	Sink	0.003
	Sink Cabinet Interior	<0.003
By computer in Room 207C	Sink	<0.003
	Sink Cabinet Interior	<0.003
By ventilation duct in Room 207C	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Emergency gas shutoff	Sink	<0.003
	Sink Cabinet Interior	<0.003
By A1/23 Socket	Sink	<0.003
	Sink Cabinet Interior	<0.003
By A1/27 Socket	Sink	<0.003
	Sink Cabinet Interior	<0.003
X-ray Room 1	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 2	South Sink	0.01
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	0.003
X-ray Room 3	North Sink	0.041
	North Sink Cabinet Interior	0.008
	South Sink	0.006
	South Sink Cabinet Interior	0.005
X-ray Room 4	South Sink	0.004
	South Sink Cabinet Interior	<0.003
	North Sink	0.004
	North Sink Cabinet Interior	<0.003

X-ray Room 5	North Sink	0.029
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 6	South Sink	0.01
	South Sink Cabinet Interior	<0.003
	North Sink	0.004
	North Sink Cabinet Interior	<0.003
X-ray Room 7	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 8	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 9	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 10	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 11	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray room 12	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 13	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003

X-ray Room 14	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 15	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 16	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
Room 217		
Lab 4	North Sink	<0.003
	South Sink	0.003
	Sink Cabinet Interior	<0.003

5.0 CONCLUSIONS AND DISCUSSION OF RESULTS

The assessment conducted on December 22, 2025, did not identify any obvious visible evidence of mercury residues on building surfaces within the areas assessed at Dentistry Clinic 2 of the Faculty of Dentistry Building. Accessible drain and sink plumbing traps could not be adequately assessed due to physical restrictions associated with the interstitial space where such fixtures are suspected to be present. In addition, the room directly beneath the laboratory was not assessed due to ongoing occupancy and continued operation of the space.

Spot sampling for mercury vapours, as summarized in Table 1, indicated that the majority of measured concentrations were either below the direct-reading equipment's detection limit or below the applicable occupational exposure limit of 0.025 mg/m³. The only exceptions were instantaneous readings obtained at the North Sinks of X-ray Rooms 3 and 5, where concentrations of 0.041 mg/m³ and 0.029 mg/m³, respectively, were identified.

Although these values exceeded the 8-hour TWA exposure limit, no visible mercury residues were observed on sink surfaces or in adjacent areas. It should be noted that these measurements represent short-duration spot readings and are not indicative of sustained time-weighted average exposure conditions. Elevated results may reflect localized or short-lived conditions and do not, on their own, confirm the presence of elemental mercury within sink fixtures or associated plumbing systems.

As screening activities identified slightly elevated instantaneous mercury vapour concentrations in X-ray Rooms 3 and 5 (relative to other areas assessed), the following precautionary measures are recommended during cabinetry removal and renovation activities in these locations:

- Conduct initial clean-up using a Mercury Recovery Vacuum Cleaner and thoroughly wipe all surfaces with TSP (Tri-sodium Phosphate) Solution.
- All remaining surfaces are to be vacuumed using a Mercury Recovery Vacuum Cleaner System.
- Apply mercury amalgamation powder to floors and other horizontal surfaces in these areas where mercury contamination may be present.
- Final wash surfaces with clean hot water and a detergent solution.
- Decontaminate remaining vertical and horizontal surfaces within the work area as indicated above.

The above noted work activities should also be performed if conditions change during the course of removal and suspect mercury is found to be present during dismantling activities. Any of the above work (if deemed necessary) is to be in compliance with Ontario Regulation 490/09 – Designated Substances, made under The Occupational Health and Safety Act and local requirements pertaining to mercury, provided that in case of conflict with these procedures, the most stringent requirements shall apply. All materials disposed of as contaminated waste are to conform to requirements of Regulation 347/90 as amended by O. Reg. 326/03 - General Waste Management under Environmental Protection Act for Waste Management, transporting and disposal of hazardous waste. Ensure waste is disposed of in accordance with the University of Toronto's Laboratory Hazardous Waste Management Manual.

6.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures. Recommendations made in this report have been made in the context of existing industry accepted guidelines, which were in place at the date of this report.

In preparing this report, Safetech Environmental Limited (Safetech) relied on information supplied by others, including independent laboratories and testing services. Except as expressly set-out in this report, Safetech has not made any independent verification of such information.

The collection of samples at the Site was consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations. As conditions between samples may vary,

the potential remains for the presence of unknown additional contaminants for which there were no known indicators.

Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. Safetech cannot warrant against undiscovered environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. Safetech accepts no responsibility for damages suffered by third parties as a result of actions based on this report.



April 16, 2026

Attention: Ms. Adryanne Quenneville

**Re: Designated Substances in Building Materials Survey Report [DSSR]
Faculty of Dentistry Clinic 2 Renovation Project P065-21-050
Dentistry Building (Building #065)**

Dear Ms. Quenneville

Further to your request, F&S Hazardous Construction Materials Group (HCMG) is pleased to provide the University Planning, Design & Construction (UPDC) with this final report summarizing observations made during the review of available reports, abatement records, bulk sampling records and current investigations/sampling for accessible designated substances in building materials for the purpose of the above-mentioned project at the University of Toronto facility Dentistry Building (Building #065) located at 124 Edward Street Toronto M5G 1G6.

Ontario Regulation 490/09 - Designated Substances (O. Reg. 490/09), made under the Occupational Health and Safety Act, outlines required steps to control exposure of workers to designated substances. Under O. Reg. 490/09 there are eleven (11) designated substances; acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. This regulation applies to every employer and worker at a workplace where the designated substances are present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to the designated substance. This assessment, issued for the above-mentioned project satisfies the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended.

This report is an assessment of designated substances for Room 207 (Clinic 2) and other locations as shown on the Project Drawings [Current Project Locations] in specific and for remaining areas of the buildings in general.

For asbestos abatement scope of work please refer to the following document issued for this project:

Scope of Work – Designated Substances Abatement/Procedures
Faculty of Dentistry, Clinic 2 Renovation Project-P065-21-050
Dentistry Building (Building #065) 124 Edward Street Toronto M5G 1G6

This report is an assessment of designated substances in building materials only and does not cover any laboratory equipment, chemicals, biological agents, radiological material or radiation sources. Fume hoods, laboratory bench tops, cabinetry and associated ductwork should be tested for the above agents and if present should be appropriately decontaminated before any disturbance, work, removal or disposal.

Quality control inspections for designated substances disturbance/removal will be performed by designated external consultant and the University of Toronto staff throughout the project. Any contamination of surround areas indicated by visual inspection or air monitoring will require complete clean-up of the affected areas, by the General Contractor, without any extra cost to the University of Toronto.

OBSERVATIONS AND RECOMMENDATIONS

Based on a review of the available reports, bulk sampling records, abatement records and current investigations/sampling for accessible designated substances in building materials the following are our observations and recommendations.



ASBESTOS

For removal or disturbances of asbestos-containing materials, all procedures as defined in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/> shall be followed. In case of conflict the more stringent procedures shall apply.

Removal of asbestos-containing materials must be conducted by a University of Toronto prequalified abatement contractor and all appropriate procedures as detailed in this report and applicable regulations shall be followed.

Representative bulk samples of building materials suspected to contain asbestos were collected following the asbestos bulk sampling procedures prescribed in Code for the Determination of Asbestos by Bulk Samples, dated the 23rd of August, 1985 and issued by the Ministry of Labour in O. Reg. 278/05. Any material that contains 0.5 per cent (%) or more asbestos by dry weight is considered to contain asbestos.

A total of fifteen (15) bulk samples of suspect asbestos-containing building materials were collected during the current investigations. All bulk samples were submitted to EMC Scientific Inc. of Mississauga, Ontario, an independent analytical laboratory, for analysis of asbestos type and concentration by Polarized Light Microscopy (PLM) with dispersion staining. A summary of sample results collected during current investigations. A copy of laboratory analytical report is attached at Appendix C. A summary of sample results is presented in Table 1.

Sample #	Location	Material	Sample Results
065-181125-1A	Room 207	Drywall Joint Compound	None Detected
065-181125-1B	Room 207	Drywall Joint Compound	None Detected
065-181125-1C	Room 207	Drywall Joint Compound	None Detected
065-181125-2A	Room 207	Ceramic tile adhesive and grout Yellow Mastic White Cementitious material Grey and light grey cement material	None Detected None Detected None Detected
065-181125-2B	Room 207	Ceramic tile adhesive and grout White cementitious material Grey and light grey cement material	None Detected None Detected
065-181125-2C	Room 207	Ceramic tile adhesive and grout White cementitious material	None Detected
065-201125-1A	Room 210	12"x12" Ceiling tile and glue puck a) Grey ceiling tile b) Brown mastic	None Detected None Detected
065-201125-1B	Room 212	12"x12" Ceiling tile and glue puck a) Grey ceiling tile b) Brown mastic	None Detected None Detected
065-201125-1C	Room 217K	12"x12" Ceiling tile and glue puck a) Grey ceiling tile b) Brown mastic	None Detected None Detected
065-201125-2A	Corridor 134K	Door Frame Caulking	None Detected
065-201125-2B	Door into 217	Door Frame Caulking	None Detected
065-201125-2C	Corridor 134K	Door Frame Caulking	None Detected
065-201125-3A	Room 212	Black paper on Metal Pan Ceiling Insulation	None Detected



Sample #	Location	Material	Sample Results
065-201125-3B	Room 212	Black paper on Metal Pan Ceiling Insulation	None Detected
065-201125-3C	Room 212	Black paper on Metal Pan Ceiling Insulation	None Detected
065-031225-2A	Room 102 (above ceiling)	Pipe straight insulation a) Black tar with fibres b) Grey layered paper	None Detected None Detected
065-031225-2B	Room 102 (above ceiling)	Pipe straight insulation a) Black tar with fibres b) Grey layered paper	None Detected None Detected
065-031225-2C	Room 133 (above ceiling)	Pipe straight insulation a) Black tar with fibres b) Grey layered paper	None Detected None Detected
065-031225-3A	Room 102 (above ceiling)	Tar-coated insulation @ fittings a) Off-white, woven fibrous b) Black tar c) Brown fibrous	None Detected Chrysotile 3% None Detected
065-031225-3B	Room 102 (above ceiling)	Tar-coated insulation @ fittings	Not Analyzed
065-031225-3C	Room 133 (above ceiling)	Tar-coated insulation @ fittings	Not Analyzed
065-031225-4A	Room 102 (above ceiling)	Parging cement @ hangers	Chrysotile 55%
065-031225-4B	Room 102 (above ceiling)	Parging cement @ hangers	Not Analyzed
065-031225-4C	Room 102 (above ceiling)	Parging cement @ hangers	Not Analyzed

Sprayed Fireproofing

Friable asbestos-containing (Chrysotile) sprayed fireproofing is present on structural beams located above false ceilings in Room 216A, 221, 221A, the section of corridor 227K outside room 221, stairwells 218S, 319S and all the mechanical duct shafts/risers up to the fifth-floor mechanical room, in the current project locations.

No sprayed fireproofing is present in Room 207.

Friable asbestos-containing fireproofing spray should be suspected to be present at block walls intersection of structural steel and at the junctions of beams and columns inside the column surrounds (block, plaster or drywall) in the current project locations and other areas of this building, including areas where the asbestos fireproofing has been previously abated from the ceilings, unless proven otherwise through available records or further investigations.

Friable asbestos-containing (Chrysotile) sprayed fireproofing is present on structural beams located above false ceilings in rooms, hallways and electrical/mechanical shafts/risers in the majority of other areas of this building from basement to 3rd floor. Asbestos-containing sprayed fireproofing is abated from the 4th and 5th floor, EXCEPT stairwells and around shafts inside mechanical rooms.

The mechanical chases and risers in the current project locations have friable asbestos-containing (Chrysotile) sprayed fireproofing present on exposed beams with overspray on walls and mechanical systems.



Please refer to sprayed fireproofing floor plans for this building, attached at Appendix A. Areas with asbestos-containing fireproofing are shown in yellow; blue hatch identifies areas with non-asbestos fireproofing; whereas no hatch represents concrete deck with no spray fireproofing present.

No removal or disturbance of asbestos-containing fireproofing material shall proceed without following appropriate asbestos procedures as listed below.

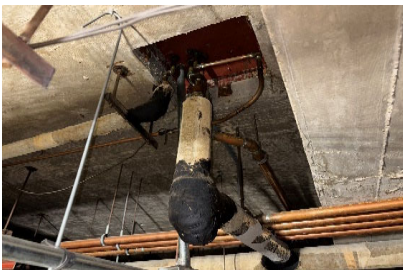
- Removal of asbestos-containing sprayed fireproofing shall follow Type 2 or Type 3 asbestos abatement procedures based on quantity of materials to be removed [Type 2 procedures if one square meter or less sprayed fireproofing surface area is to be removed. Type 3 procedures if greater than one square meter of sprayed fireproofing surface area is to be removed].
- Removal, reconstruction or patching of mechanical shaft walls and access will require, as a minimum, Type 2 asbestos procedures. Any worker performing work within the Type 2 enclosure or working under Type 2 conditions or inspecting above ceiling areas where asbestos-containing fireproofing is present will require appropriate training including respirator fit testing as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program.
- No ceiling tile removal or other ceiling access is allowed in areas with asbestos-containing sprayed fireproofing. Any ceiling access will require prior approval from the University of Toronto. Any work in the ceiling space by electrical, mechanical or other trades INCLUDING INSPECTIONS in areas with asbestos-containing sprayed fireproofing shall be carried out following Type 2 asbestos procedures (full enclosure with negative air pressure).
- Any block wall removal or penetrations that can disturb the top courses (adjoining the deck) shall require appropriate asbestos procedures. Block wall removal or penetrations that are not likely to disturb the top courses of wall can be done as clean demolition.
- Any partition, wall removal or penetrations that can disturb or lift the ceiling tiles in a locations with asbestos-containing sprayed fireproofing shall require appropriate asbestos procedures.
- As a requirement of Ontario Regulation 278/05, "removal of air handling equipment including rigid ducting in a building with asbestos-containing sprayed fireproofing is a Type 3 asbestos work". Please be advised that no ductwork or other air handling equipment is to be removed from ANY location of the building (including previously abated areas) without following appropriate asbestos procedures.
- Adding any piece of ductwork in a non-asbestos fireproofing area does not require asbestos procedures.
- For entry and any work inside mechanical shafts and risers, the University of Toronto Standard Operating Procedures ID 0.10 and ID R2.10 shall be followed (copies attached at Appendix B).

Thermal Mechanical Insulation

Friable asbestos-containing (Chrysotile and Amosite) thermal mechanical insulation is confirmed to be present on mechanical systems, including, but not limited to, heating and plumbing pipe, straights, valves, tees, elbows, pipe hangers and fittings throughout the current project locations and the remainder of the building.

Black tar coated insulation present on pipe fittings contains non-friable asbestos (Chrysotile) based on laboratory analytical results of bulk samples of this homogenous material.

A typical view of such insulation is provided in the picture below.



ACM-Tar-coated insulation on fittings

Black layered paper insulation present on pipe straights does not contain asbestos based on laboratory analytical results of bulk samples of this homogenous material.

A typical view of such insulation is provided in the picture below.



Non-ACM black layered paper pipe insulation

Thermal mechanical insulation where present on air handling units, ductwork, pumps, tanks, boilers etc. within the current project locations and the remainder of the building shall be considered to contain asbestos.

All thermal mechanical insulation present above ceiling located in areas with asbestos-containing sprayed fireproofing should be considered asbestos contaminated.

Friable asbestos-containing thermal insulation may exist in presently inaccessible and hidden wall/ceiling/floor penetrations and cavities. This includes under fixed cabinetry where foot pedals control the water supply. Any insulation discovered in such locations shall be assumed to contain asbestos unless proven otherwise through confirmatory sampling.

No removal or disturbance of asbestos-containing thermal mechanical insulation shall proceed without following appropriate asbestos procedures as listed below.

- Removal of asbestos-containing thermal mechanical insulation shall follow Type 2, Type 2 glove bag or Type 3 asbestos abatement procedures based on quantity and location of materials to be removed [Type 2 procedures for one square meter or less area of asbestos-containing thermal mechanical insulation to be removed (inside an enclosure). Type 3 procedures for greater than one square meter of asbestos-containing thermal mechanical insulation to be removed (inside an enclosure)].



Flooring Materials

Asbestos containing (Chrysotile) vinyl floor tiles (non-friable) are present in Room 128, 202K, 207, 207 D, E, F, K, 208, 210, 212, 221, 225K and 226K of the current project locations.

Vinyl sheet flooring with friable asbestos-containing (Chrysotile) paper backing is present in Room 319 and in the north section of Room 207 (under the entire elevated platform rooms and surrounding corridors, including Room 207A, B, C) of the current project locations.

Flooring scheduled for removal in corridors and Room 126, 126A, 134K, 217, 227K, 216K and 224V of the current project is confirmed to be non-asbestos.

Based on extensive laboratory analytical results of representative bulk samples of flooring mastics from throughout the building, all flooring mastics are confirmed NOT to contain asbestos in this building.

Floor finishes in other current project locations and the remainder of the building consists of both asbestos-containing (Chrysotile) and non-asbestos materials. All vinyl floor finishes (non-friable) and vinyl sheet flooring backing paper (friable) within the building shall be considered to contain asbestos unless proven otherwise through confirmatory sampling or a review of available records.

Asbestos-containing flooring and backing paper are suspected to be present under non-asbestos flooring (carpet, vinyl sheet, wood and non-asbestos floor tiles, etc.).

No removal or disturbance of asbestos-containing vinyl flooring and backing paper shall proceed without following appropriate asbestos procedures as listed below:

- Type 2 (full enclosure) asbestos abatement procedures shall be followed for removal of asbestos-containing vinyl floor tiles and mastic. Grinding of asbestos-containing mastic shall follow Type 2 (full enclosure) asbestos procedures if the grinder is equipped with a HEPA vacuum attachment. The procedures shall be elevated to Type 3 if the grinding equipment is not equipped with a HEPA vacuum attachment.
- Type 2 or Type 3 asbestos abatement procedures shall be followed for removal of asbestos-containing backing paper based on quantity of materials to be removed [Type 2 procedures if one square meter or less area of asbestos-containing backing paper is to be removed. Type 3 procedures if greater than one square meter of area of asbestos-containing backing paper is to be removed].
- Under the University of Toronto Asbestos Management Program the design or work should not include installing rigid flooring over existing asbestos-containing vinyl floor tiles or sheeting.

Ceiling Tiles

No asbestos-containing lay-in ceiling tiles, 12x12 stick on ceiling tiles and adhesive glue are present within this building based on laboratory analytical results of bulk samples of this homogenous material. However, all ceiling tiles present in locations with asbestos-containing sprayed fireproofing above must be considered contaminated with asbestos.

Black insulating paper on top of metal pan ceiling within the current project locations does not contain asbestos based on laboratory analytical results of bulk samples of this homogenous material.

A typical view of such paper insulation is provided in the pictures below.



Asbestos-containing transite ceiling tiles are present at various locations within the building.

No removal or disturbance of these materials shall proceed without following appropriate asbestos procedures as listed below.

- No ceiling tile removal or other ceiling access is allowed in areas with asbestos-containing sprayed fireproofing. Any ceiling access will require prior approval from the University of Toronto. Any work in the ceiling space by electrical, mechanical or other trades INCLUDING INSPECTIONS in areas with asbestos-containing sprayed fireproofing shall be carried out following Type 2 asbestos procedures (full enclosure with negative air pressure).
- Work of replacement of lay-in ceiling tiles in areas that contain asbestos-containing sprayed fireproofing shall require full asbestos Type 2 procedures. Removed ceiling tiles shall be disposed of as asbestos waste.
- No disturbance, cutting, drilling, grinding, sanding, etc. of asbestos transite tiles is allowed without following appropriate asbestos procedures.
- Type 2 procedures are required for the intact removal and re-installation of transite ceiling tiles from areas that contain asbestos-containing sprayed fireproofing. If the transite material is broken, cut, drilled, ground, sanded, etc. Type 3 asbestos procedures must be followed.
- Type 1 procedures are required for the intact removal and re-installation of transite ceiling tiles from areas that contain non-asbestos sprayed fireproofing or no fireproofing spray. If the transite material is broken, cut, drilled, ground, sanded, etc. the more stringent Type 2 or Type 3 asbestos procedures must be followed.

Manufactured Asbestos Cement Products (Transite)

Non-friable asbestos cement products (Transite) sheets are present on top of heating units in Room 126.

No asbestos cement products were observed in other accessible locations of the project areas where removal or demolition is planned.

Non-friable asbestos cement products (Transite) are present in various other areas of this project and building and are used as ceiling tiles, wall panels, countertops, lab bench tops and electrical heat protectors/shield under cabinets.



No removal or disturbance of these materials shall proceed without following appropriate asbestos procedures as listed below.

- No disturbance, cutting, drilling, grinding, sanding, etc. of asbestos cement products is allowed without following appropriate asbestos procedures.
- Type 2 procedures are required for the intact removal and re-installation of transite ceiling tiles from areas that contain asbestos-containing sprayed fireproofing. If the transite material is broken, cut, drilled, ground, sanded, etc. Type 3 asbestos procedures must be followed.
- Type 1 procedures are required for the intact removal and re-installation of transite ceiling tiles from areas that contain non-asbestos sprayed fireproofing or no fireproofing spray. If the transite material is broken, cut, drilled, ground, sanded, etc. the more stringent Type 2 or Type 3 asbestos procedures must be followed.
- Type 1 procedures are required for the intact removal of other asbestos cement products (Transite). If the material is broken, cut, drilled, ground, sanded, etc. the more stringent Type 2 or Type 3 asbestos procedures must be followed.

Plaster

Based on laboratory analytical results of samples of this homogeneous material obtained in the past, all plaster finishes on walls and ceilings in this building can be considered not to contain asbestos.

Drywall Joint Compound

Based on laboratory analytical results of drywall joint compound applications on gypsum board and drywall finishes obtained during this investigation and in the past, all drywall joint compounds applications in this building can be considered not to contain asbestos.

Texture Coat Finishes

No texture coat finishes exist in this building.

Masonry Sealant

Based on laboratory analytical results of representative bulk samples of block masonry sealant present underneath the paint on the walls collected from available masonry locations within this building, all block masonry sealant present underneath the paint on visible masonry walls of this building can be considered not to contain asbestos.

Interior Door Frame Caulking

Interior door caulking applications in this building do not contain asbestos based on laboratory analytical results of bulk samples of this homogenous material.

Window Caulking and Glazing Putty

Non-friable asbestos-containing (Chrysotile) window caulking and glazing putty is present on all windows within the current project locations and other areas of this building.

No removal or disturbance of asbestos-containing window caulking and glazing putty shall proceed without following appropriate asbestos procedures. Based on relevant scope of work for the project, following are our recommendations:

- Demolition work of doors/windows with asbestos-containing glazing putty and caulking shall proceed with caution. Type 1 asbestos procedures shall be followed for removal of door/window caulking and



glazing putty if using non-powered tools. If the work is done by means of power tools, asbestos Type 2 procedures shall be followed. Dispose the removed materials as asbestos waste.

Ceramic Tile and Grout

Green ceramic tiles, adhesives and grout present within the current project locations do not contain asbestos based on laboratory analytical results of bulk samples of this homogenous material

Roofing Materials

As per records available (provided by IRC Building Sciences Group Inc.) all sections of the Dentistry Building roof were replaced in 2020 and therefore are considered not to contain asbestos.

Gaskets in Piping Systems and/or other Mechanical Equipment

Gaskets inside the piping systems and other mechanical equipment within the current project locations and other areas of the building shall be considered to contain asbestos.

- It is our assessment that Type 1 asbestos procedures are required for opening bolts on the flange and/or other mechanical equipment. However; the General Contractors and sub-contractors may follow their internal health and safety protocols for assessment and follow their prescribed work practices.

Others

No other accessible building materials suspected to contain asbestos were observed within the current project locations.

Other materials within this building that are identified to contain asbestos include:

- Paper inside vintage light fixtures.

Asbestos-containing materials for which either the sampling records are not available or that are currently hidden or are inaccessible may be present within the building. These materials include:

• Fire stop material	• Transite drain pipes	• Fire rated door liners	• Gaskets in piping systems
• Gaskets/internal liners in mechanical and electrical equipment	• Electrical wiring jacket	• Electrical panel backing	• Transite in HV cable trench

Investigation including sampling and analysis is recommended in the event of discovery of such materials for determination of presence/absence of asbestos. Appropriate asbestos removal procedures shall be implemented if the material is identified as asbestos-containing.

No removal or disturbance of asbestos-containing materials shall proceed without following appropriate asbestos procedures.

LEAD

Bulk samples of ceramic tiles scheduled to be removed under the current project scope of work were collected during this investigation for determination of lead content. All samples were submitted to an independent laboratory AGAT Laboratories of Mississauga, Ontario for determination of lead content.

A summary of the bulk sample results is presented in Table 2 below. Copies of laboratory analytical reports are attached at Appendix C.

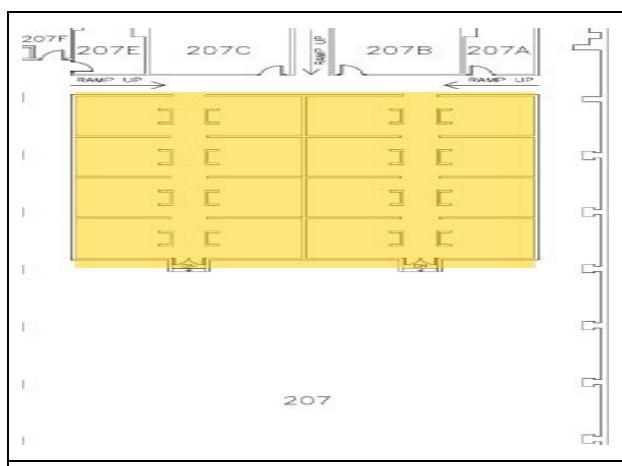
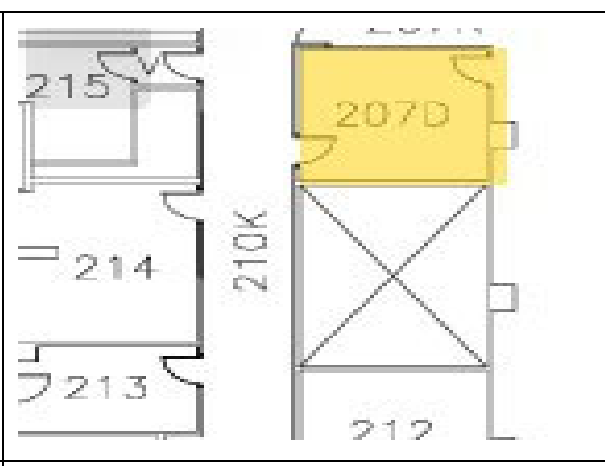
Table 2 - Lead in Materials Bulk Sample Results Summary

Sample #	Location	Material	Test Results	Classification
065-181125-L1	Room 207	Green Ceramic Tile	10400 µg/g	LCM

LCM: Lead-Containing Material ($\geq 0.1\%$ or 1000 µg/g or 1000PPM Lead Content); LLLM: Low Level Lead Material ($< 0.1\%$ or 1000 µg/g or 1000PPM Lead Content).

Laboratory analytical results for lead content in the green ceramic tile present throughout the current project locations, identify this material as Lead Containing Material ($\geq 0.1\%$ or 1000 µg/g or 1000PPM Lead Content).

Lead-lined drywall walls, doors and door glass are present on the elevated floor section (Dental Xray Areas) in Room 207D and at the north end of Room 207. The elevated computer flooring in this area is also suspected of containing lead.

	
Lead drywall walls, doors, glass and flooring in the north end of Room 207	Lead drywall in Room 207D

Lead drainpipes are present under some sinks scheduled for removal in this project.

A typical view of such drain pipes is provided in the picture below.



All Paint finishes on fans and other mechanical equipment within the building shall be considered to contain lead.

All paint finishes on walls, structural components, windows, doors, bulkheads, baseboards, floors, ceilings, piping systems, ductwork, mechanical equipment and all other surfaces within the current project locations and other areas of the building should be assumed to contain lead ($\geq 0.1\%$ or 1000



µg/g or 1000PPM Lead Content) unless proven otherwise through confirmatory sampling or a review of previous sampling/abatement records.

There is no regulatory limit currently in Ontario that determines what amount of lead in paint constitutes the paint to be considered “lead based paint”. The Environmental Abatement Council of Canada (EACC) – Lead Guideline For Construction, Renovation, Maintenance or Repair (2014) recommends that a content of 0.1% (i.e. 1000 µg/g or 1000 mg/kg or 1000 ppm lead) is considered a “de minimis” or “virtually safe” level of lead in paint or surface coatings, provided that aggressive disturbance or heating does not occur.

The above lead-based paint standards are the generally accepted threshold for defining a “lead-based paint”. These levels are used as action levels where special precautions are typically implemented to contain debris created during construction or renovation activities and to protect workers from exposure during these activities.

The classification, general measures and procedures (or Type of operations) required for removal or disturbance of lead paint, lead painted materials and lead based materials shall depend on the type of work to be conducted, the procedures adopted and the limit of lead in paint accepted by the General Contractor and their sub-contractors.

For removal or disturbance of lead paint, lead painted materials and lead based materials, the General Contractor and their sub-contractors work procedures and training requirements as identified in Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Lead-containing waste should be recycled if practicable or handled and disposed of according to Ontario Regulation 347.

Lead shall also be prudently presumed to be present in the following materials:

- As a component of the solder on joints between copper pipe and fittings.
- As a component of the solder on the wire connections of electric components.
- As a component of wool present as caulking in bell fittings at cast iron drains.
- As a component of glazing on spectra glaze blocks and ceramic tiles.
- As a component of lead-acid batteries in emergency lights.
- As lead sheeting.
- As pigmented mortar.
- As lead piping.

MERCURY

Mercury is identified in the drains present within the current project locations. Please refer to the “U of T - Dentistry Building Clinical Laboratory 2 - Mercury Vapour Spot Sampling Report – January 2026” by Safetech Environmental Ltd. attached at Appendix D.

Follow removal procedures as specified in the above report.

Elemental mercury may be present in the electro-thermal switching devices and may be present in trace amount as vapours in metal halide bulbs, fluorescent light tubes and incandescent mercury bulbs. It is recommended that at the time of their disposal, all mercury vapour bulbs may be recycled and possibly reused by qualified personnel or may be disposed of according to applicable regulations.



SILICA

Silica-containing materials are present within the current project locations and in other areas throughout the building. Crystalline silica is the primary component of many building materials such as concrete, concrete block, cement, mortar, drywall etc. Silica has also been found as a filler material in insulation. Exposure to airborne crystalline silica can occur when these building materials are disturbed or turned into powder (particularly grinding, drilling or cutting operations and during major demolition).

The General Contractor shall follow work procedures as identified in The Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict the more stringent procedures shall apply.

The classification, general measures and procedures (or Type of operations) required shall depend on the type of work to be conducted and the procedures adopted by the contractor. The following section outlines the classification of silica containing materials disturbance based on the guideline and procedures referred above.

Type 1 Operations

- Drilling of holes in concrete or rock that is not part of a tunneling operation or road construction.
- 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.

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 tunneling 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.
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

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.

BENZENE

Above ground fuel storage tank is present in the emergency generator location in this building.

Benzene is a natural part of crude oil, and gasoline. Benzene, or Benzol, is a colorless liquid with a sweet or aromatic hydrocarbon odour. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Exposure to pure benzene within buildings other than where it is produced or used as part of a manufacturing process is



unlikely. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia.

OTHER DESIGNATED SUBSTANCES - Acrylonitrile, Arsenic, Coke Oven Emissions, Ethylene Oxide, Isocyanates and Vinyl Chloride

The building is not and was not used for any process or manufacturing, therefore none of the other Designated Substances listed above are suspected to be present.

CONCLUSION

Based on the information contained in the available asbestos survey reports, abatement records, bulk sampling records and current investigation/sampling; designated substances (Asbestos, Lead, Mercury and Silica) are present in different building materials within the current project locations and other areas of the Dentistry Building (Building #065).

NOTE: If additional materials not covered in this report are discovered during the project activities and suspected of containing designated substances, all work that may disturb the material shall be stopped and the Project Manager be contacted for arranging further investigation (i.e., sampling and analysis) to determine the presence of any designated substances.

TRAINING

Any worker who may inadvertently come into contact with any asbestos-containing materials in the course of their work for the current project must have at a minimum Asbestos Awareness Training as outlined in the University of Toronto, Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>.

Workers performing any asbestos work will require appropriate training, including respirator fit testing, as identified in Ontario Regulation 278/05 and the University of Toronto Asbestos Management Program, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Workers performing removal or disturbance of surfaces applied with lead based paint and lead-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour, Immigration, Training and Skills Development Guidelines for Lead on Construction Projects, available at <https://www.labour.gov.on.ca/english/hs/pubs/lead/> and the University of Toronto Lead Management Program/Standard Operating Procedures for the Control of Lead During Building Maintenance and Construction Activities, available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Workers performing removal or disturbance of silica-containing materials shall have appropriate training, including respirator fit testing, as identified in Ontario Ministry of Labour Guideline “Silica on Construction Projects” available at <https://www.labour.gov.on.ca/english/hs/pubs/silica/> and The University of Toronto “Crystalline Silica Procedures” available at <https://ehs.utoronto.ca/resources/policies-and-procedures/>. In case of conflict, the more stringent procedures shall apply.

Workers performing removal or disturbance of other hazardous materials shall require appropriate training as specified in the relevant regulations/guidelines.

Work will only be allowed once the training certificates of workers working inside asbestos enclosures are verified by the consultants and/or the University of Toronto designated staff.



CLOSURE

The conclusions presented in this report represent the best technical judgment based on the data obtained from available asbestos survey reports, bulk sampling records, abatement records and current investigation/sampling. The conclusions are based on the site conditions at the time the survey was performed at the specific testing and/or sampling locations and can only be extrapolated to an undefined limited area around these locations.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided.

Information provided in this report is intended for the subject project in compliance to the requirements under Section 30 of the Ontario Occupational Health and Safety Act (OHSA), Revised Statutes of Ontario 1990, as amended. Any use by a third party of this report or any reliance by a third party on or decisions made by a third party based on the findings described in this report, is the sole responsibility of such third parties. The University of Toronto F&S Hazardous Construction Materials Group accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

Sincerely,

Prepared By:

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Senior Inspector
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University of Toronto
F&S Property Management
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doug.colby@utoronto.ca

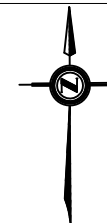
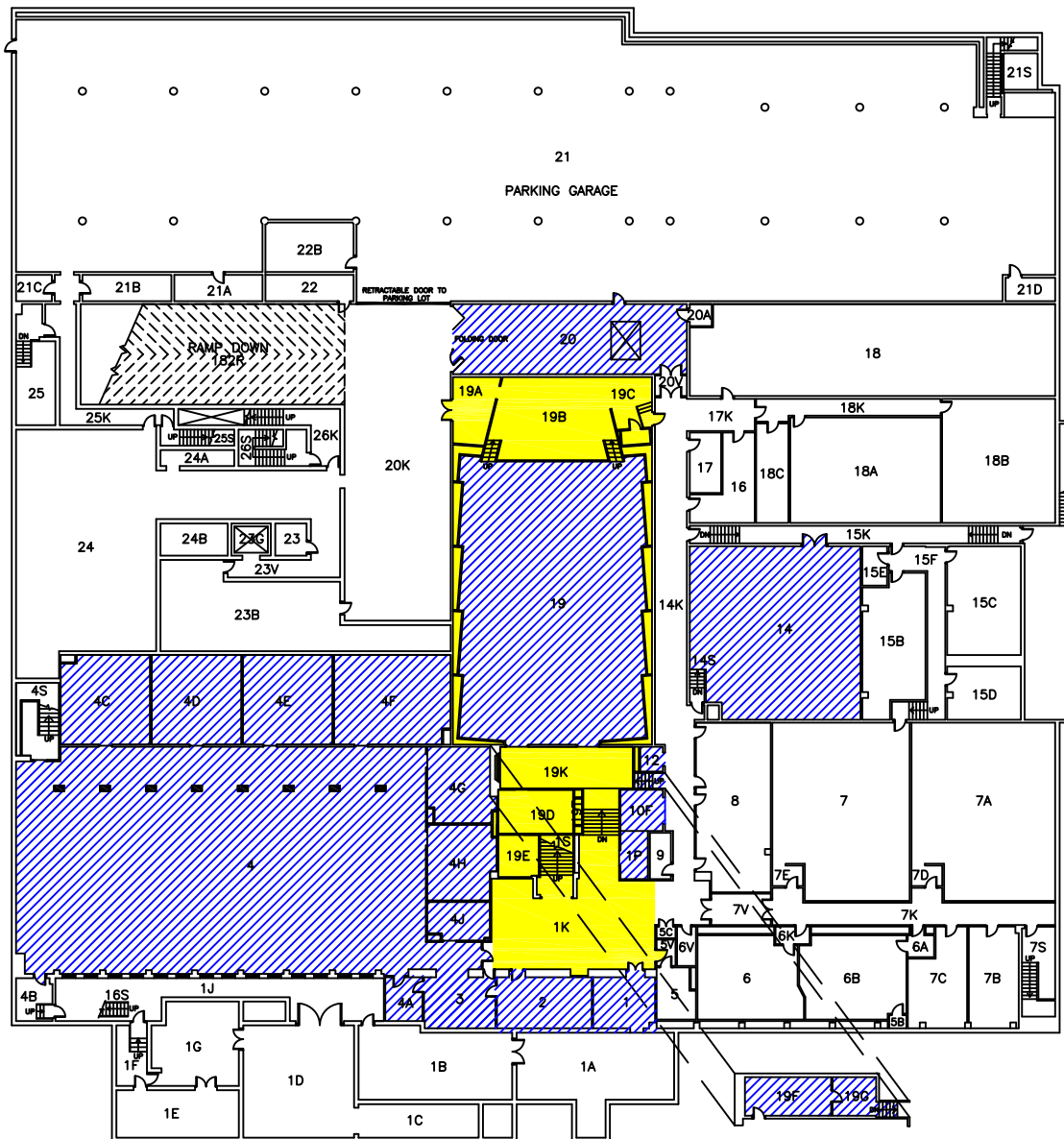
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University of Toronto
F&S Property Management
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irfan.miraj@utoronto.ca



APPENDIX A

Fireproofing Location Plans



BSMNT REV NOV 2022

LEGEND

ASBESTOS-CONTAINING MATERIALS	
SYMBOL	DESCRIPTION
	NON-ACM SPRAYED FIREPROOFING
	ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING [CONCRETE DECK]

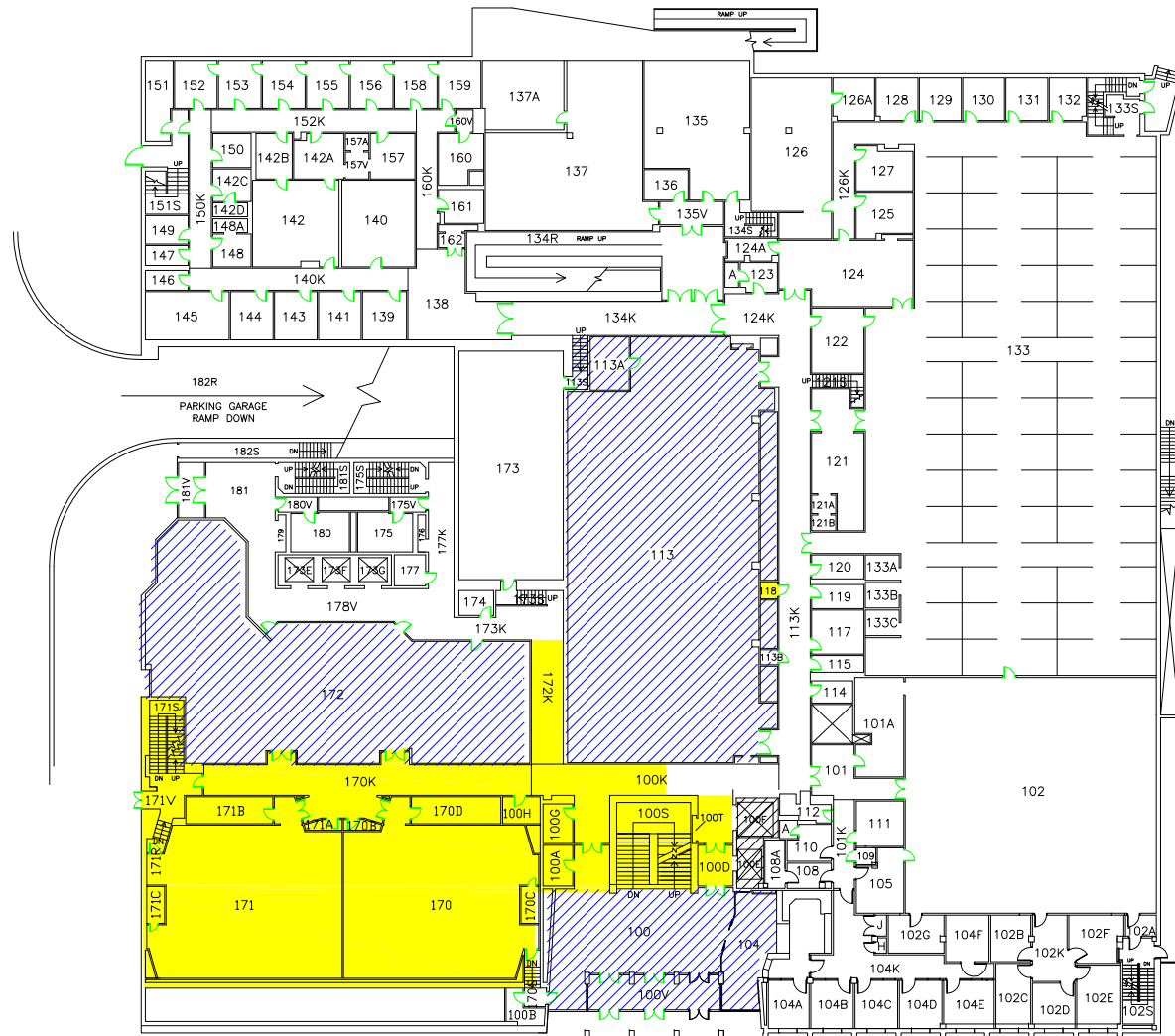
ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET

BASEMENT LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
Date	AS-02-01
Scale	DTS




MEZZANINE ABOVE 19K



1st FLOOR REV MAR 2024

LEGEND

SPRAYED FIREPROOFING TYPES

SYMBOL	DESCRIPTION
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	ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING (CONCRETE DECK)

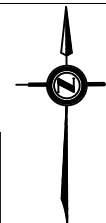
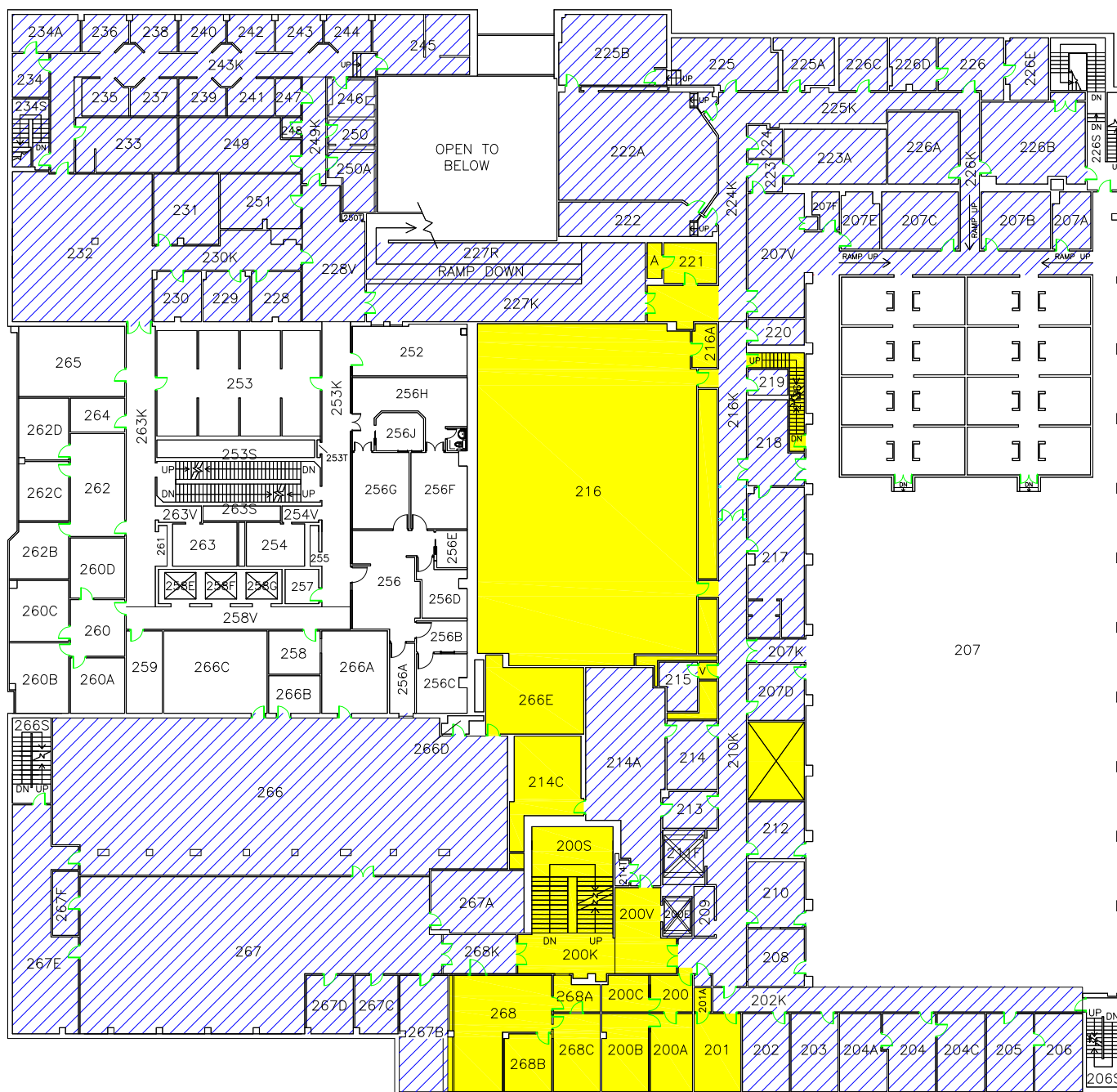
University of Toronto
Dentistry Building
124 Edward Street

Project Name and Address
ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET




FIRST LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
Date	AS-02-02
Rev	of AS-02-07
DTS	



LEGEND

ASBESTOS-CONTAINING MATERIALS

SYMBOL	DESCRIPTION
	NON-ACM SPRAYED FIREPROOFING
	ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING [CONCRETE DECK]

University of Toronto
Dentistry Building
124 Edward Street

Project Name and Address
ASBESTOS-CONTAINING MATERIALS

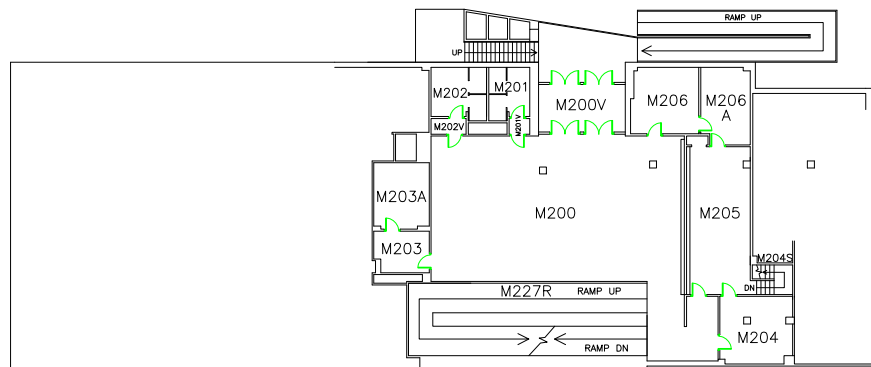
**DENTISTRY BUILDING,
124 EDWARD STREET**

SECOND LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
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Date	AS-02-03
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Scale of AS-02-07



2ND FLOOR MEZZ.
REV NOV 2018

LEGEND

ASBESTOS-CONTAINING MATERIALS

SYMBOL	DESCRIPTION
	NON-ACM SPRAYED FIREPROOFING
	ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING [CONCRETE DECK]

University of Toronto
Dentistry Building
124 Edward Street

Project Name and Address ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET




SECOND LEVEL MEZZANINE
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
Date	AS-02-03
Scale	of AS-02/1-07
DTS	



3RD FL REV
AUG 2018

LEGEND

ASBESTOS-CONTAINING MATERIALS	
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	ACM SPRAYED FIREPROOFING
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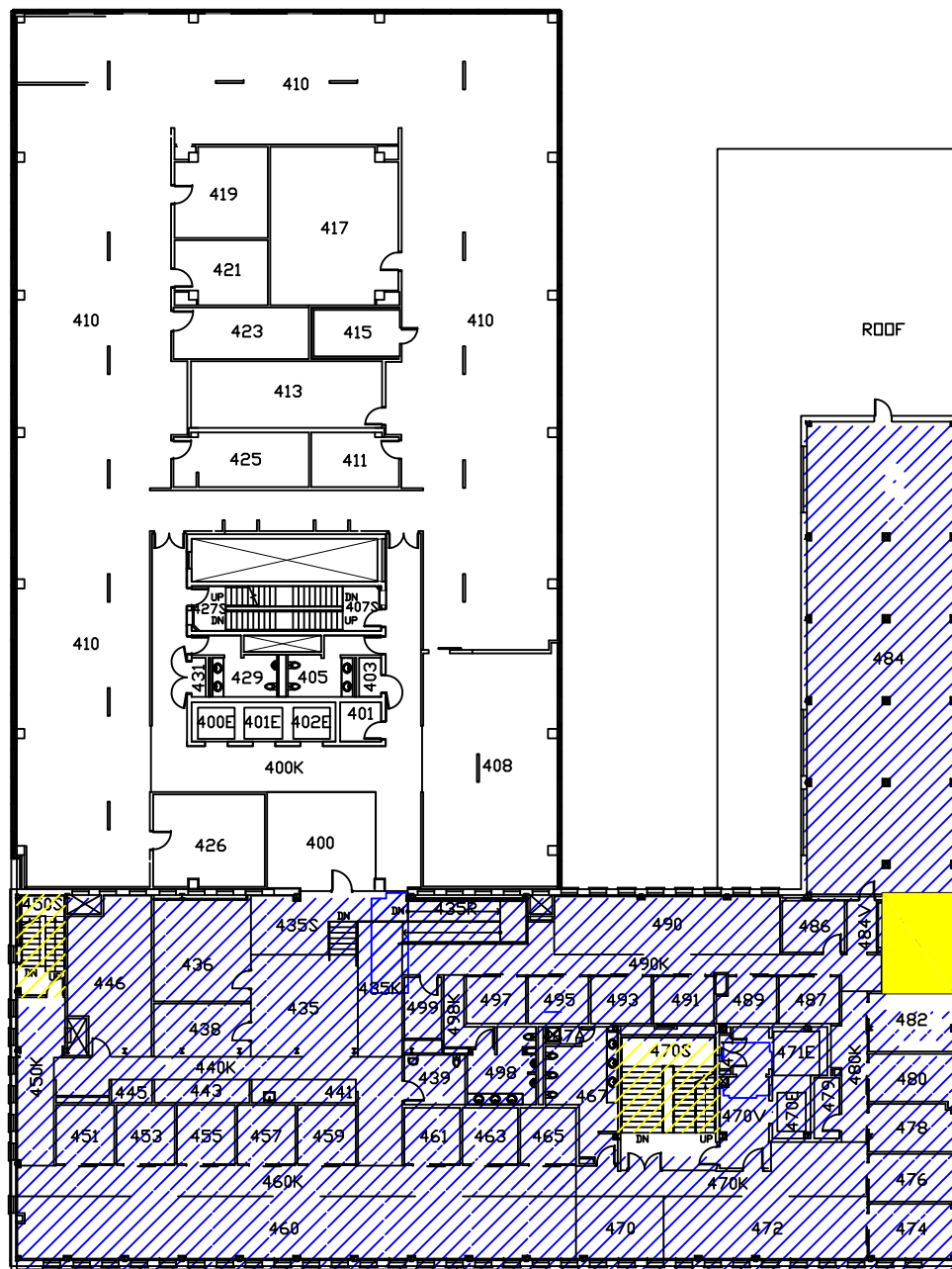
University of Toronto
Dentistry Building
124 Edward Street

Project Name and Address
ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET

THIRD LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
Date	
Scale	DTS



LEGEND

ASBESTOS-CONTAINING MATERIALS

SYMBOL	DESCRIPTION
	NON-ACM SPRAYED FIREPROOFING
	ACM SPRAYED FIREPROOFING
	SUSPECT ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING [CONCRETE DECK]

University of Toronto
Dentistry Building
124 Edward Street

Project Name and Address ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET

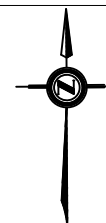
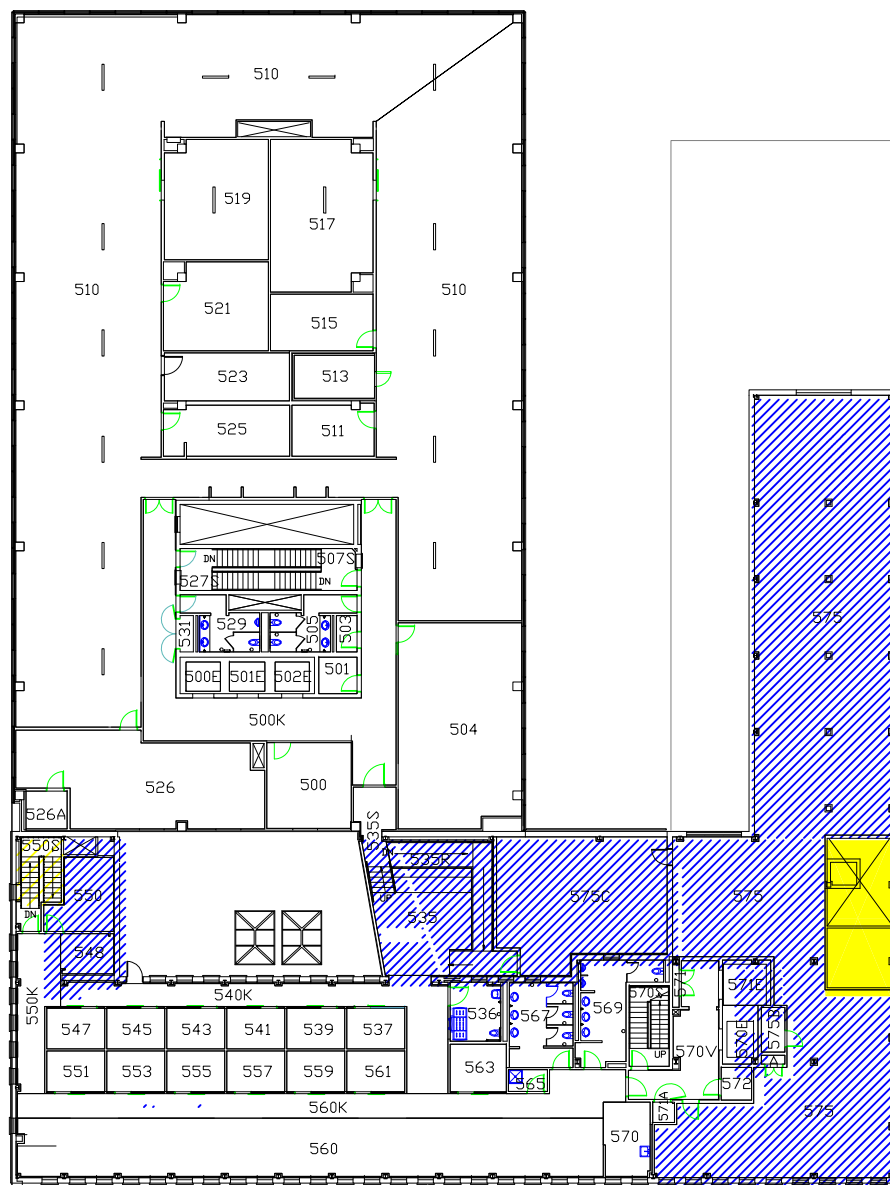
FOURTH LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO





Project No. Sheet

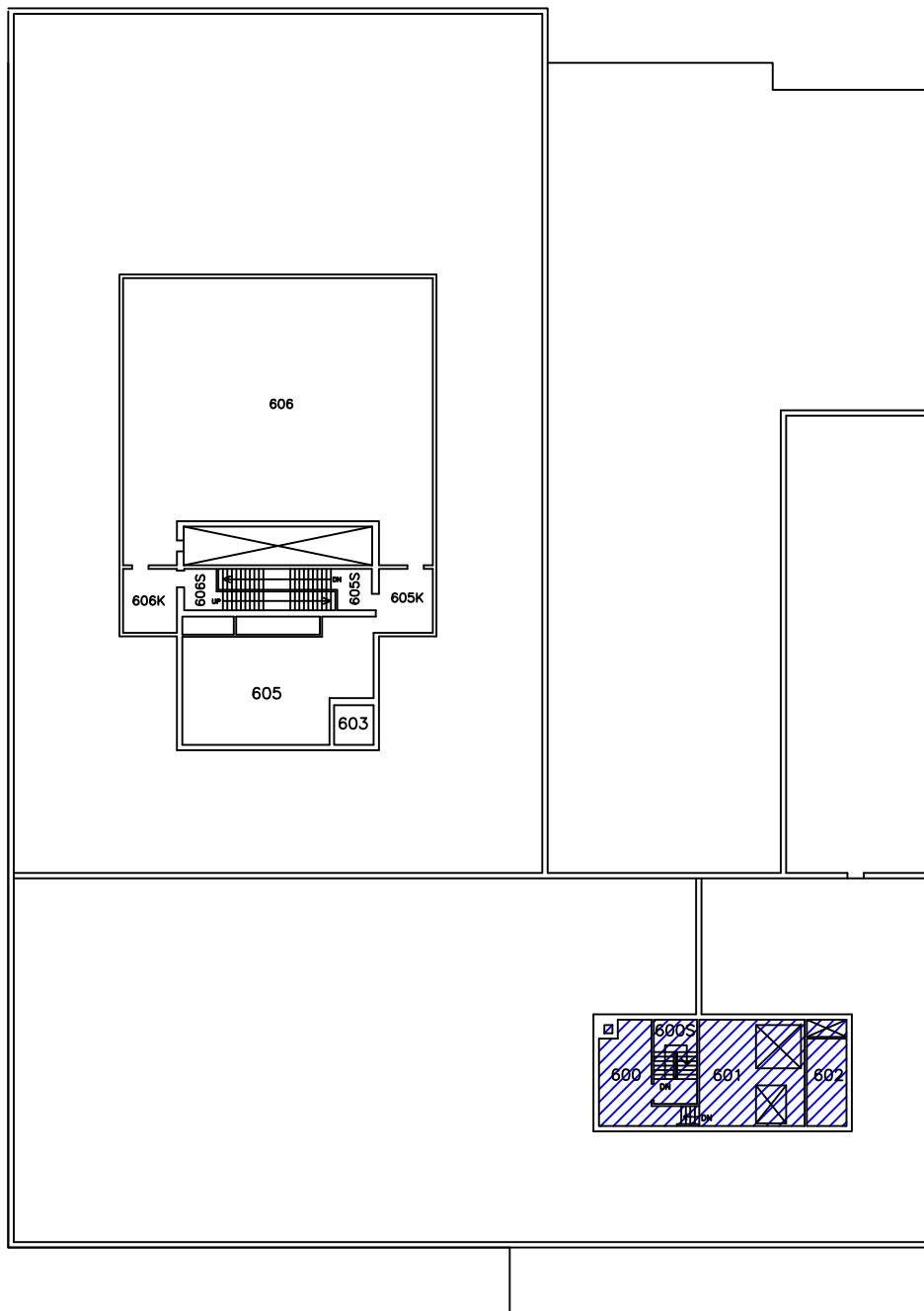
Date AS-02-05

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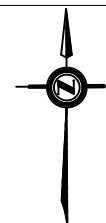
DTS



LEGEND		
SYMBOL	DESCRIPTION	
	NON-ACM SPRAYED FIREPROOFING	
	SUSPECT ACM SPRAYED FIREPROOFING	
	ACM SPRAYED FIREPROOFING	
	NO SPRAYED FIREPROOFING	
	University of Toronto Centenary Building 124 Edward Street	
Project Name and Address		
Project No.		FIG2
Date		
Scale NTS		






REVISED MARCH 2012



LEGEND

ASBESTOS-CONTAINING MATERIALS

SYMBOL	DESCRIPTION
	NON-ACM SPRAYED FIREPROOFING
	ACM SPRAYED FIREPROOFING
	NO SPRAYED FIREPROOFING [CONCRETE DECK]

University of Toronto
Dentistry Building
124 Edward Street

ASBESTOS-CONTAINING MATERIALS

DENTISTRY BUILDING,
124 EDWARD STREET

SIX LEVEL
UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Project No.	Sheet
Date 2010'07'23	AS-02-07
Scale DTS	of AS-02-07



APPENDIX B

University of Toronto Standard Operating Procedure ID 0.10 and R2.10



Office of Environmental Health and Safety
UNIVERSITY OF TORONTO

Standard Operating Procedures
for the Control of Asbestos Fibres
During Non-Asbestos Work in Chases (Shafts)

ID 0.10

**ENTRY INTO MECHANICAL CHASES (SHAFTS)
IN BUILDINGS WITH ASBESTOS-CONTAINING SPRAYED FIREPROOFING**

This section addresses entry and non-asbestos work performed in mechanical chases where asbestos-containing sprayed fireproofing is exposed and present, and where overspray may be present on horizontal and vertical surfaces. If there is damaged asbestos material, report to your supervisor and contact Facilities and Services, Hazardous Construction Materials Group (HCMG) for repair/clean-up. Do not proceed with work until repair/clean-up has been completed.

1.0 APPLICATION

1.1 Certain work activities can be performed by entering into these chases without the requirement for asbestos precautions as long as no asbestos material is being disturbed or damaged. These activities are:

- Entry into and moving through the chase.
- Turning valves, switches, work on electrical panels/equipment etc. if not contaminated with asbestos.
- Inspection, checking metres, reading instruments etc.
- Work on shaft doors and associated locks where no asbestos contamination or materials are present*.

When performing the above, do not disturb any asbestos material, including sprayed fireproofing or overspray on structure and cross bracing. It should be noted that storing items in these spaces is discouraged.

1.2 General reminders:

- Prior to walking in the area and before beginning work, conduct a quick visual inspection. Report any fallen debris/potential sprayed asbestos fireproofing to your supervisor and arrange for clean up following asbestos procedures prior to continuing work.
- Before starting work, inspect the equipment you will be working on (e.g. electrical panel, conduit, cable, valve, switch, etc.) and whether there is any potential for disturbing asbestos. Be aware of working close to the ceiling where asbestos sprayed fireproofing may be present and be accidentally disturbed during the work. Follow appropriate Type 2 procedures if there is potential for disturbance. Speak to your supervisor if you have any concerns.

1.3 Any "work" in a mechanical chase, not described above, is considered asbestos disturbance and Type 2 or 3 procedures, as outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act, must be followed.

1.4 Removal or disturbance of less than 1 square metre of friable material is a Type 2 Procedure. Please refer to U of T SOP ID R2.10 for detailed instructions on the appropriate procedure to follow. The requirements of SOP ID R2.10 apply except for the requirement for an enclosure.

1.5 Removal or disturbance of more than 1 square metre of friable material is a Type 3 Procedure. Type 3 asbestos work requires additional training and is conducted by external asbestos contractors only. Contact HCMG if Type 3 work is required.

1.6 *For fire-rated doors with friable asbestos-containing core materials, the door itself contains asbestos; refer to SOP R1.50 or SOP 2.50 where applicable and appropriate.



Office of Environmental Health and Safety
UNIVERSITY OF TORONTO

Standard Operating Procedures
for the Control of Asbestos Fibres
During Type 2 Operations

ID R2.10

MINOR FRIABLE ASBESTOS REMOVAL

The exposure of workers and the corresponding measures and procedures for the minor disturbance of friable asbestos are classified as Type 2.

When authorized workers conduct Type 2 activities involving the minor disturbance of friable asbestos, specific precautions are required in order to maintain a safe work environment for the workers and other building occupants.

The procedures follow the requirements outlined in the *Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations* (O.Reg. 278/05) under the Occupational Health and Safety Act of Ontario, and the transport and delivery of asbestos waste in accordance with Regulation 347 under the Environmental Protection Act.

1.0 APPLICATION

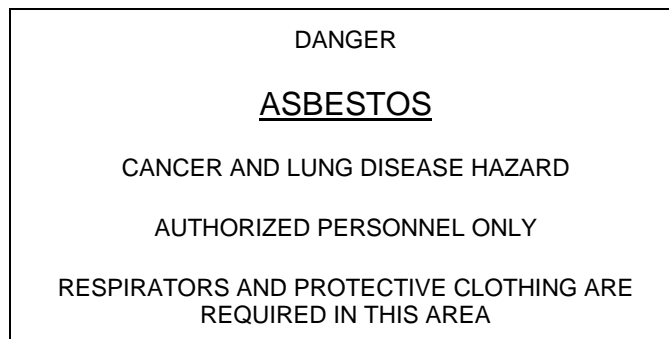
- 1.1 These procedures apply to all work involving the minor removal of friable asbestos-containing material; this activity may generate enough airborne asbestos to require protective equipment, but is of short duration..
- 1.2 Minor removal of material containing asbestos means the removal of **one square meter or less of wet friable material**, including mechanical insulation, sprayed fireproofing and texture plaster. The length of insulated pipe corresponding to the maximum allowable one square metre (10.76 square feet) of insulation may be determined by the following equation:
 - 1.2.1 $\text{Area (outer surface of insulated pipe in sq. ft.)} = \text{Length (of insulated pipe in ft.)} \times 2\pi R$ (or $2 \times 3.14 \times R$ where R = Radius of pipe and insulation).
- 1.3 Work on friable asbestos-containing material is classified according to the total area on which work is done consecutively in a room or enclosed area, even if the work is divided into smaller jobs. O. Reg. 278/05, s. 12 (5). Therefore a project that would be a Type 3 project (removal of more than 1 square metre in a room or area) cannot be broken into smaller amounts in order to be done as a series of Type 2 projects.

2.0 DEFINITIONS

- 2.1 *Work Areas:* Where actual work activity involving asbestos takes place.
- 2.2 *Enclosure:* An impermeable barrier made of rip-proof polyethylene plastic or similar material, inside which the asbestos activity takes place.
- 2.3 *Damp Wiping:* A cleaning process for removing residual asbestos contamination using damp-cloths, sponges or mops.

3.0 **MATERIALS AND EQUIPMENT**

- 3.1 *HEPA Vacuum:* Vacuum cleaner equipped with a High Efficiency Particulate Arresting (HEPA) Filter, fitted with appropriate tools. The vacuum equipment shall have a filtering system capable of collecting and retaining fibres greater than 0.3 microns in diameter at 99.97% efficiency.
- 3.2 *Dropsheet:* Rip-proof polyethylene plastic or other suitable material that is impervious to asbestos.
- 3.3 *Encapsulant (Sealer):* Bonding agent or sealant which can be applied as a liquid and controls the release of fibres or dust from the surface.
- 3.4 *Amended Water:* A mixture of water and a non-ionic, non-sudsing surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.
- 3.5 *Sprayer:* Sprayer with mist nozzle for application of amended water or sealant.
- 3.6 *Asbestos Waste Receptacles:* Containers for waste must be dust tight, suitable for the type of waste, impervious to asbestos and identified as asbestos waste. All waste must have two layers of containment (e.g. double bagging) and be sealed and cleaned with a damp cloth or HEPA vacuum immediately before being removed from the work area. Also, it must be labelled as per the Ontario Ministry of Environmental regulation, and shall be acceptable to the disposal site selected and the Ministry of the Environment.
- 3.7 *Small Tools:* Sponge(s), bucket(s), ladder, etc.
- 3.8 *Tape:* Reinforced duct tape or double-sided tape suitable for sealing polyethylene bags.
- 3.9 *Respirator:* See section 5 Personal Protective Equipment.
- 3.10 *Coveralls:* Full body disposable clothing of an appropriate size with attached hood. It should be elasticized at the cuffs and hood, and be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.11 *Shoe covers:* Elasticized disposable shoe covers with textured bottom for better grip. Shoe covers should be made of material which does not readily retain or permit penetration of asbestos fibres.
- 3.12 *Signage:* Warning of asbestos hazard in the work area. An example is shown below.



4.0 **NOTICE OF ASBESTOS WORK**

Appropriate parties, including local-area occupants and when necessary other building users, must be notified of planned Type 2 activities involving friable asbestos. The following methods of communication apply:

- 4.1 The notification is to include a description of the planned Type 2 activity, its proposed duration, and in general terms the precautionary measures required to maintain a safe work environment. This information is to be provided to the following parties.

- 4.1.1 All appropriate Directors (St. George, UTM, UTSC, Capital Projects)
- 4.1.2 Manager, Environmental Hazards and Safety (St. George only)
- 4.1.3 Director, Environmental Health and Safety
- 4.1.4 Co-chairs of both the Trades and the Utilities Joint Health and Safety Committees
- 4.1.5 Co-chairs, Local Joint Health and Safety Committee
- 4.1.6 Local Area Occupants
- 4.2 Signage at Work Location
- 4.2.1 This sign informs building users of the asbestos-related work being conducted at that work location and that entry into the area is restricted to authorized personnel only. Signs are to be posted in the work area in sufficient numbers to warn of the hazard.

5.0 PERSONAL PROTECTION

- 5.1 *Respirators:* Workers are required to don respirators when performing Type 2 work. The following shall apply:
 - 5.1.1 All respiratory equipment shall be individually assigned and identified.
 - 5.1.2 Each worker must attend respiratory protection training and be fit tested prior to beginning work.
 - 5.1.3 Workers shall wear at least a half facepiece respirator fitted with purple HEPA (P100) filters.
 - 5.1.4 Disposable single-use type respirators are not permitted.
 - 5.1.5 All respirators shall be approved and labelled for protection against asbestos fibres, and shall meet the design and usage requirements of the National Institute for Occupational Safety & Health (NIOSH).
 - 5.1.6 Replace filter cartridges as appropriate (36 hours of use or more frequently). Dispose of used cartridges as asbestos waste.
 - 5.1.7 No supervisor or worker shall have facial hair which affects respirator-to-face seal.
- 5.2 *Protective Clothing:* All workers must be provided with full body disposable coverall and shoe covers as described in Section 3.
- 5.3 *Facilities:* Provide facilities for washing hands and face which shall be used by every worker when leaving asbestos work areas.
- 5.4 *Practice:* Workers shall not eat, drink, smoke or chew while in work areas.
- 5.5 *Work Area Entry:* All persons shall wear respirators with HEPA (P100) filters and clean coveralls before entering work area.
- 5.6 *Work Area Exit:* Before leaving the Work Area and still wearing a respirator, a worker shall:
 - 5.6.1 Thoroughly HEPA vacuum protective clothing, respirator and footwear.
 - 5.6.2 Remove decontaminated coveralls and wash hands and face with water (in Work Area).
 - 5.6.3 Leave the Work Area in street clothes and proceed to the nearest washroom to wash hands and face.
 - 5.6.4 Coveralls may be reused throughout a day provided they are disposed of after each shift, and left inside the Work Area after each use.
 - 5.6.5 Thoroughly clean respirator.

6.0 PREPARATION – WORK AREAS

- 6.1 Clear immediate work areas of all moveable furnishings or equipment. Any furnishings or equipment not removed shall be adequately covered and sealed using polyethylene and duct tape.
- 6.2 Remove any friable material containing asbestos and any visible dust that is likely to be disturbed and that is lying on any surface in the vicinity of the work area by HEPA vacuuming or damp wiping.

- 6.3 Provide a temporary enclosure to prevent the spread of airborne dust from the work area. The enclosure shall be as airtight as conditions permit including the provision of a double overlapping flap at the entrance.
- 6.4 Post signs warning of asbestos hazard at the entrances to the work area.
- 6.5 Shut down all ventilation to and from the work area. Seal and tape all ventilation openings within the work area with polyethylene sheeting.
- 6.6 Locate HEPA vacuum body outside enclosure. Locate vacuum hose within enclosure to provide negative pressure effect in enclosure.
- 6.7 Don respiratory equipment, coveralls and shoe covers as describe in Section 5.

7.0 EXECUTION

- 7.1 Use only hand-held non-powered tools. Do not use compressed air.
- 7.2 Remove any visible dust from the work area or the surfaces of asbestos products by HEPA vacuuming or damp wiping.
- 7.3 Wet (with amended water) any asbestos-containing material that may be disturbed during this work. Maintain wet conditions throughout work. Do not use excess water which will drip off the material.
- 7.4 Remove asbestos-containing thermal insulations in layers, maintaining all exposed surfaces of insulation in a wet condition.
 - 7.4.1 Seal exposed ends of asbestos-containing pipe insulation with 6 oz. canvas and lagging.
- 7.5 Remove asbestos-containing sprayed materials by scraping wetted ACM directly into waste containers. Do not allow ACM to fall to the floor of the enclosure.
- 7.6 Clean all surfaces from which ACM has been removed with scouring pads, vacuuming or wet-sponging to remove all visible material after completion of removal of ACM.
- 7.7 Carefully remove the asbestos material and place in an asbestos waste receptacle; double bag all waste as described in the Waste Transport and Disposal Section below and HEPA vacuum or damp-wipe the second container immediately prior to passing it out of the work area.
- 7.8 Seal the surfaces from which asbestos-containing material has been removed with a coat of encapsulant (sealer).
- 7.9 Frequently and at regular intervals during the work and immediately upon completion of the work, remove dust and waste from the workplace by HEPA vacuuming or damp-wiping, mopping or wet sweeping.
- 7.10 On completion of work, HEPA vacuum and wet clean all surfaces inside enclosure. Clean all reusable tools and pass out of enclosure. Clean framing for enclosure, plywood, etc. that will be reused and spray with encapsulant (sealer).
- 7.11 When removing enclosure, all polyethylene, tape and cleaning cloths are to be wetted and shall be carefully rolled together and bagged as asbestos waste. Coveralls shall be disposed of as contaminated waste.

8.0 WASTE TRANSPORT AND DISPOSAL

- 8.1 Place asbestos waste into asbestos waste receptacles. Asbestos waste must be double-bagged, or double-contained, in receptacles that are clearly marked as containing asbestos. The bags or containers shall be selected to prevent any perforations or tears during filling, transport and disposal. The bags are usually polyethylene bags sealed with duct tape. The outer bags must be HEPA vacuumed or damp wiped to remove any surface contamination immediately before being removed from the work area.
- 8.2 *For the St. George campus, transport the sealed containers to the locked, labelled dump-container that is maintained by Facilities and Services. The key for the locked dump-container can be obtained from the Materials Expeditor (Trade Services Tool Crib). Place the asbestos waste bags in the dump container and relock the dump-

container. For the appropriate disposal procedures at the Mississauga and Scarborough campuses, consult with the Director of the University department that initiated the work.



APPENDIX C

Laboratory Analytical Results

Laboratory Analysis Report

To:

Faiq Amir
University of Toronto
Environmental Health & Safety
215 Huron Street, 7th Floor
Toronto, Ontario
M5S 1A1

EMC LAB REPORT NUMBER: A127561

Project Name: Dental (065)

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: Nov 20/25

Date Analyzed: Nov 20/25

Analyst: Arth Parikh

Reviewed By: Malgorzata Sybydlo

Project No: 1116691

Number of Samples: 3

Date Reported: Nov 20/25

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
065-181125-1A	A127561-1	Room 207/ Drywall Joint Compound	White, joint compound	ND			100
065-181125-1B	A127561-2	Room 207/ Drywall Joint Compound	White, joint compound	ND			100
065-181125-1C	A127561-3	Room 207/ Drywall Joint Compound	White, joint compound	ND			100
065-181125-2A	A127561-4	Room 207/ Ceramic tile adhesive and grout	3 Phases:				
			a) Yellow, mastic	ND			100
			b) White, cementitious material	ND			100
065-181125-2A	A127561-4	Room 207/ Ceramic tile adhesive and grout	c) Grey and light grey, cementitious material	ND			100
065-181125-2B	A127561-5	Room 207/ Ceramic tile adhesive and grout	2 Phases:				
			a) White, cementitious material	ND			100
			b) Grey and light grey, cementitious material	ND			100
065-181125-2C	A127561-6	Room 207/ Ceramic tile adhesive and grout	White, cementitious material	ND			100

Note:

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

A127561



UNIVERSITY OF
TORONTO

REQUEST FOR ANALYSIS

Ship To: EMC Scientific Inc. Sample Reception 5800 Ambler Drive, Suite 100, Mississauga, ON L4W4J4 Ph: 905.629.9247 Fax: 905.629.2607		Shipped From: Environmental Health & Safety, 7th Floor 215 Huron Street Toronto, Ontario M5S 1A1		PLM Bulk xx TEM Bulk Bulk Mould PCM Air Other	
Samples Collected By: Doug Colby		Project, S.O. #: 1116691			
		Building Name: Dental (065)			
Sample Number	Date Sampled	Sample Location	Sample Description	Analysis Turnaround Time	
				Regular	24 Hours
065-181125-1A	18-Nov-25	Room 207	Drwyall Joint Compound		x
065-181125-1B	18-Nov-25	Room 207	Drwyall Joint Compound		x
065-181125-1C	18-Nov-25	Room 207	Drwyall Joint Compound		x
065-181125-2A	18-Nov-25	Room 207	Ceramic tile adhesive and grout		x
065-181125-2B	18-Nov-25	Room 207	Ceramic tile adhesive and grout		x
065-181125-2C	18-Nov-25	Room 207	Ceramic tile adhesive and grout		x
Relinquished By: Doug Colby Print Name			 Signature		Nov 18 2025 Date
Received By: Amy Bradford Print Name			 Signature		Nov 18 '25 Date
Analyzed By: Ash Parikh Print Name			 Signature		Nov 20 '25 Date
Comments: Stop further analysis for each alpha numerical set once asbestos is identified by PLM method. e-mail results to: yangting.shek@utoronto.ca With CC to: ehs.office@utoronto.ca irfan.miraj@utoronto.ca doug.colby@utoronto.ca faiq.amir@utoronto.ca a.greco@utoronto.ca					

Printed at Nov 20/25 9:00

4 of 8

Laboratory Analysis Report

To:

Doug Colby
University of Toronto
Environmental Health & Safety
215 Huron Street, 7th Floor
Toronto, Ontario
M5S 1A1

EMC LAB REPORT NUMBER: A127610
Project Name: Dental (065)
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Nov 21/25 **Date Analyzed:** Nov 21/25
Analyst: Dorothy Cheung
Reviewed By: Malgorzata Sybydlo

Project No: 1116691
Number of Samples: 9
Date Reported: Nov 21/25

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
065-201125-1A	A127610-1	Room 210/ 12x12 ceiling tile and glue puck	2 Phases: a) Grey, ceiling tile b) Brown, mastic	ND		75	25
065-201125-1B	A127610-2	Room 212/ 12x12 ceiling tile and glue puck	2 Phases: a) Grey, ceiling tile b) Brown, mastic	ND		75	25
065-201125-1C	A127610-3	Room 217K/ 12x12 ceiling tile and glue puck	2 Phases: a) Grey, ceiling tile b) Brown, mastic	ND		75	25
065-201125-2A	A127610-4	Corridor 134K/ door frame caulking	Yellow, caulking	ND			100
065-201125-2B	A127610-5	Door into 217/ door frame caulking	White, caulking	ND			100
065-201125-2C	A127610-6	Corridor 134K/ door frame caulking	Yellow, caulking	ND			100
065-201125-3A	A127610-7	Room 212/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10
065-201125-3B	A127610-8	Room 212/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10
065-201125-3C	A127610-9	Room 212/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10

Note:

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.



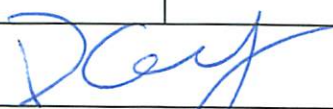
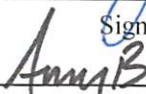

UNIVERSITY OF
TORONTO

REQUEST FOR ANALYSIS

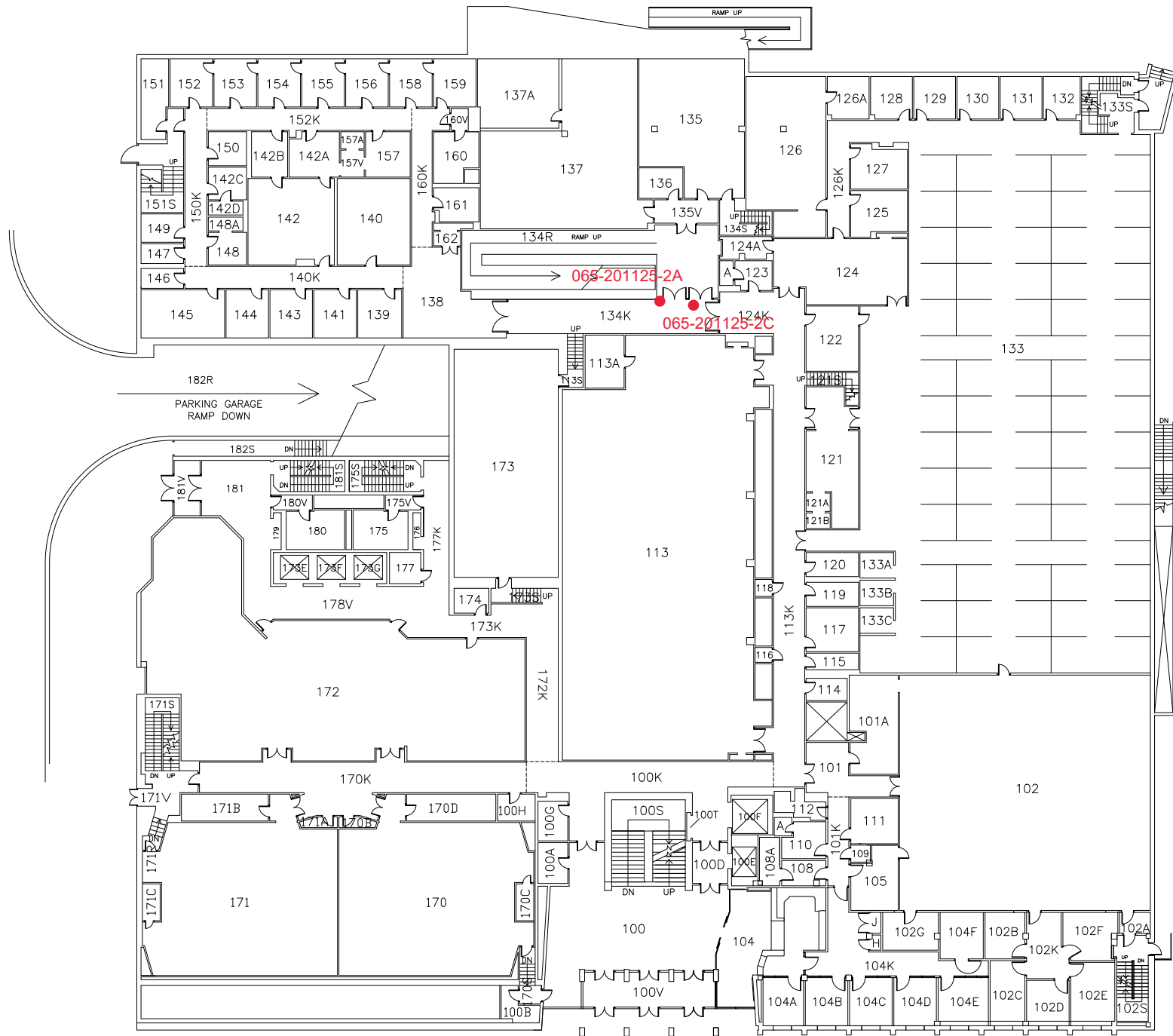
A127610

Ship To: EMC Scientific Inc. Sample Reception 5800 Ambler Drive, Suite 100, Mississauga, ON L4W4J4 Ph: 905.629.9247 Fax: 905.629.2607			Shipped From: Environmental Health & Safety, 7th Floor 215 Huron Street Toronto, Ontario M5S 1A1		PLM Bulk xx TEM Bulk Bulk Mould PCM Air Other
Samples Collected By: Doug Colby	Project, S.O. #: 1116691	Building Name: Dental (065)			

Sample Number	Date Sampled	Sample Location	Sample Description	Analysis Turnaround Time	
				Regular	24 Hours
065-201125-1A	20-Nov-25	room 210	12x12 ceiling tile and glue puck		x
065-201125-1B	20-Nov-25	room 212	12x12 ceiling tile and glue puck		x
065-201125-1C	20-Nov-25	room 217K	12x12 ceiling tile and glue puck		x
065-201125-2A	20-Nov-25	corridor 134K	Door frame caulking		x
065-201125-2B	20-Nov-25	door into 217	Door frame caulking		x
065-201125-2C	20-Nov-25	Corridor 134K	Door frame caulking		x
065-201125-3A	20-Nov-25	room 212	Black paper on metal pan ceiling insulation		x
065-201125-3B	20-Nov-25	room 212	Black paper on metal pan ceiling insulation		x
065-201125-3C	20-Nov-25	room 212	Black paper on metal pan ceiling insulation		x

Relinquished By: Doug Colby Print Name	 Signature	Nov 20 2025 Date	Comments: Stop further analysis for each alpha numerical set once asbestos is identified by PLM method. e-mail results to: yangting.shek@utoronto.ca With CC to: ehs.office@utoronto.ca irfan.miraj@utoronto.ca doug.colby@utoronto.ca faiq.amir@utoronto.ca a.greco@utoronto.ca
Received By: Amy Bradford Print Name	 Signature	Nov 20 '25 Date	
Analyzed By: Dorothy Cheung Print Name	 Signature	Nov 21 '25 Date	

Puro Col NOV 21/25 9:00



N

University
of Toronto

Office of
Space
Management



Dentistry
Building

Bldg #65

1st Floor

97/08

Revisions

98/01
02/02
06/03
17/03

DWG. #

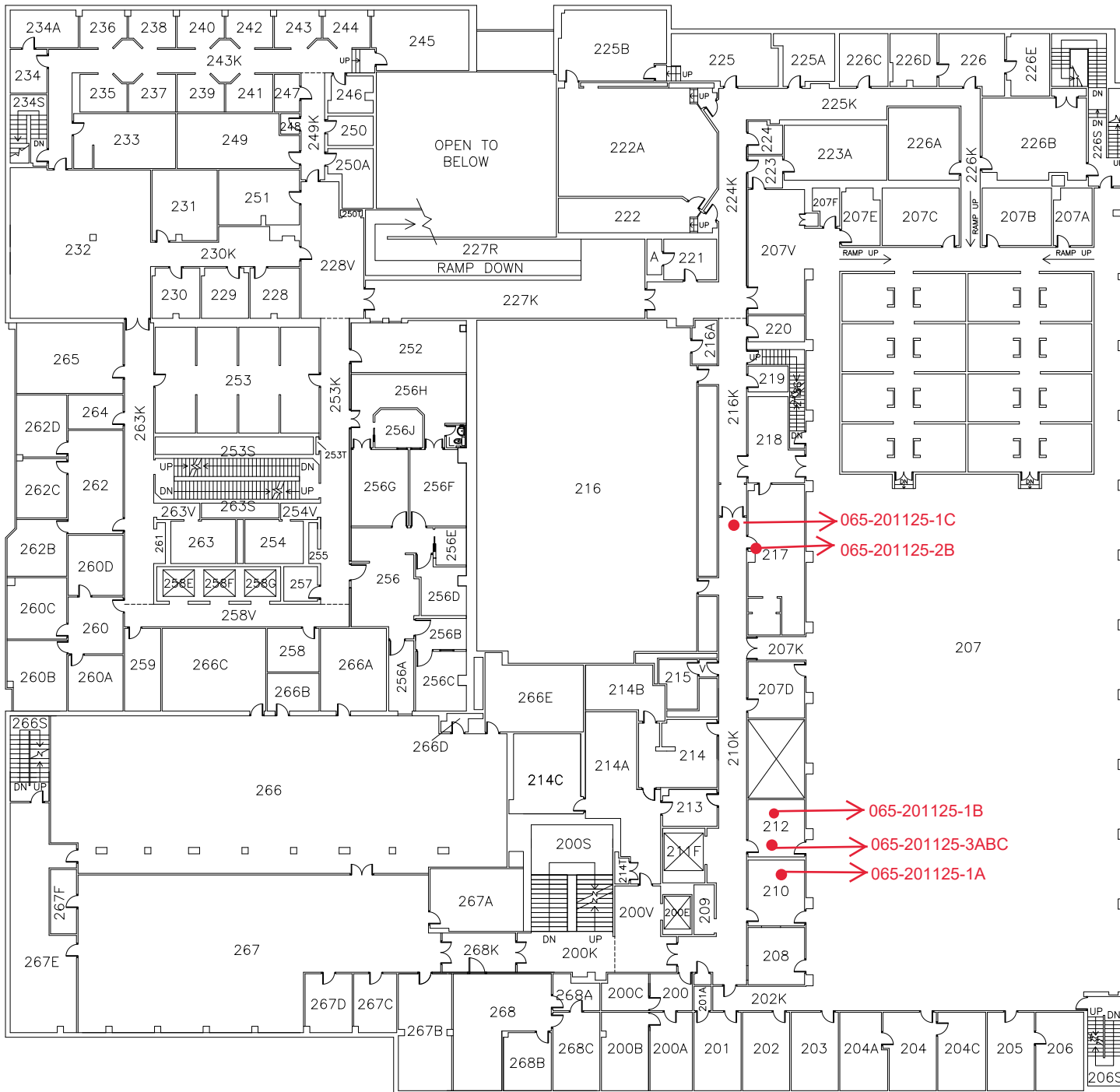
2 of 8

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Scale(ft)

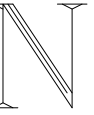
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Scale(m)



Scale(ft) 10 20 30 40 50 60

Scale(m) 2 4 6 10 20



University
of Toronto

Office of
Space
Management



Dentistry
Building

Bldg #65

2nd Floor

97/08

Revisions

06/03
07/03
11/04
17/03
20/03

DWG. #

4 of 8

Laboratory Analysis Report

To:

Faiq Amir
University of Toronto
Environmental Health & Safety
215 Huron Street, 7th Floor
Toronto, Ontario
M5S 1A1

EMC LAB REPORT NUMBER: A128330

Project Name: Dental (065)

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: Dec 10/25

Date Analyzed: Dec 15/25

Analyst: Jayoda Perera

Reviewed By: Malgorzata Sybydlo

Project No: 1232102

Number of Samples: 12

Date Reported: Dec 15/25

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
065-031225-1A	A128330-1	Room 102 (above ceiling)/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10
065-031225-1B	A128330-2	Room 102 (above ceiling)/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10
065-031225-1C	A128330-3	Room 133 (above ceiling)/ black paper on metal pan ceiling insulation	Black, paper	ND		90	10
065-031225-2A	A128330-4	Room 102 (above ceiling)/ pipe straight insulation	2 Phases:				
			a) Black, tar with fibres b) Grey, layered paper	ND ND		20 90	80 10
065-031225-2B	A128330-5	Room 102 (above ceiling)/ pipe straight insulation	2 Phases:				
			a) Black, tar with fibres b) Grey, layered paper	ND ND		20 90	80 10
065-031225-2C	A128330-6	Room 133 (above ceiling)/ pipe straight insulation	2 Phases:				
			a) Black, tar with fibres b) Grey, layered paper	ND ND		20 90	80 10
065-031225-3A	A128330-7	Room 102 (above ceiling)/ tar-coated insulation @fittings	3 Phases:				
			a) Off white, woven fibrous material	ND		90	10
			b) Black, tar c) Brown, fibrous material	Chrysotile ND	3	90	97 10
065-031225-3B	A128330-8	Room 102 (above ceiling)/ tar-coated insulation @fittings	NA	NA			
065-031225-3C	A128330-9	Room 133 (above ceiling)/ tar-coated insulation @fittings	NA	NA			

EMC LAB REPORT NUMBER: A128330




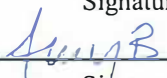
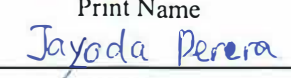

Client's Job/Project No.: 1232102

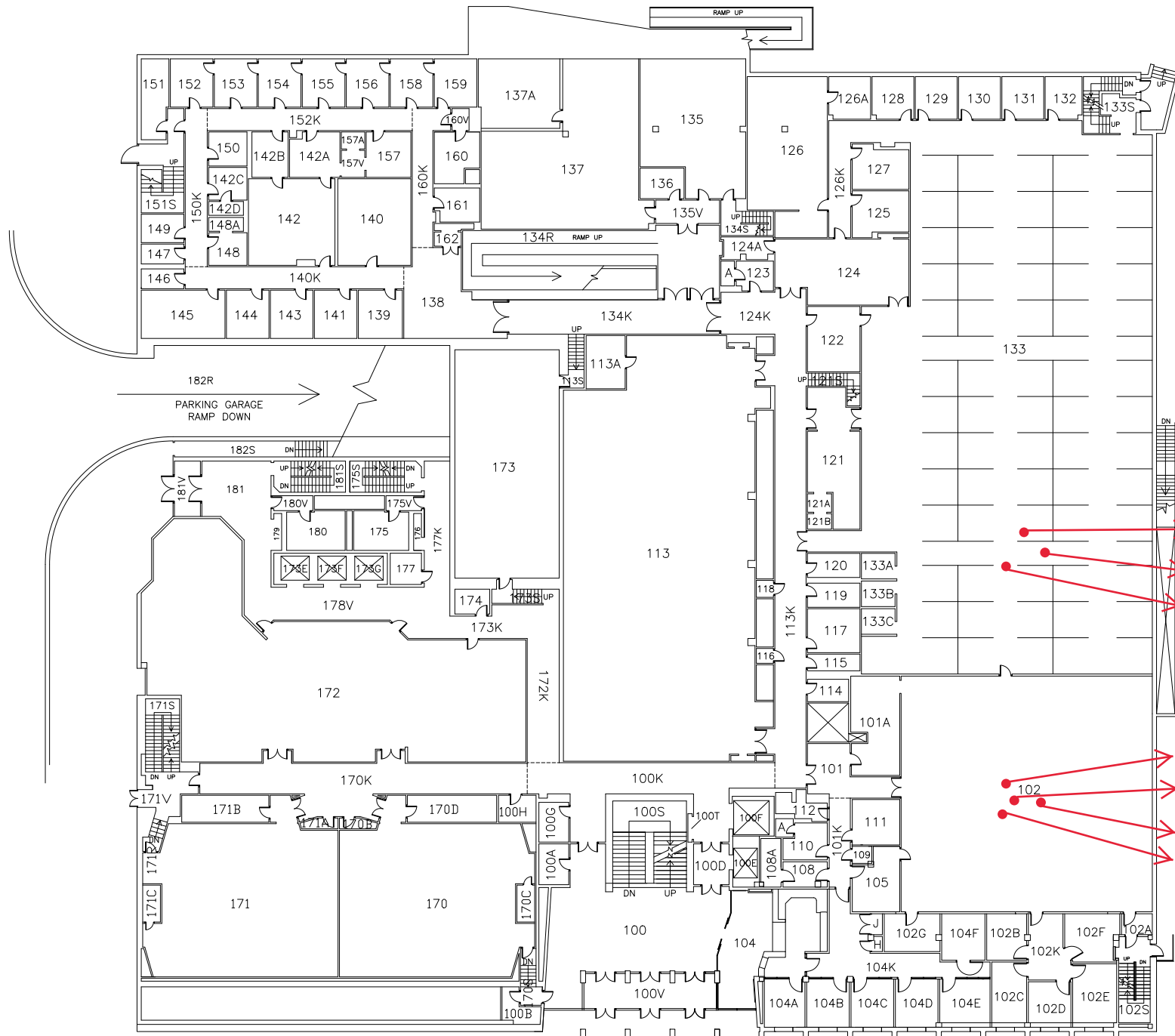
Analyst: Jayoda Perera

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
065-031225-4A	A128330-10	Room 102 (above ceiling)/ parging cement @ pipe hangers	Grey, parging cement	Chrysotile	55		45
065-031225-4B	A128330-11	Room 102 (above ceiling)/ parging cement @ pipe hangers	NA	NA			
065-031225-4C	A128330-12	Room 102 (above ceiling)/ parging cement @ pipe hangers	NA	NA			

Note:

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

 UNIVERSITY OF TORONTO		REQUEST FOR ANALYSIS			
Ship To: EMC Scientific Inc. Sample Reception 5800 Ambler Drive, Suite 100, Mississauga, ON L4W4J4 Ph: 905.629.9247 Fax: 905.629.2607		Shipped From: Environmental Health & Safety, 7th Floor 215 Huron Street Toronto, Ontario M5S 1A1			
Samples Collected By: Faiq Amir		Project, S.O. #: 1232102	PLM Bulk xx TEM Bulk Bulk Mould PCM Air Other		
		Building Name: Dental (065)			
Sample Number	Date Sampled	Sample Location	Sample Description	Analysis Turnaround Time	
				Regular	24 Hours
065-031225-1A	03-Dec-25	Room 102 (Above Ceiling)	Black paper on metal pan ceiling insulation		X <i>51D</i>
065-031225-1B	03-Dec-25	Room 102 (Above Ceiling)	Black paper on metal pan ceiling insulation		X
065-031225-1C	03-Dec-25	Room 133 (Above Ceiling)	Black paper on metal pan ceiling insulation		X
065-031225-2A	03-Dec-25	Room 102 (Above Ceiling)	Pipe Straight Insulation		X
065-031225-2B	03-Dec-25	Room 102 (Above Ceiling)	Pipe Straight Insulation		X
065-031225-2C	03-Dec-25	Room 133 (Above Ceiling)	Pipe Straight Insulation		X
065-031225-3A	03-Dec-25	Room 102 (Above Ceiling)	Tar-coated insulation @ fittings		X
065-031225-3B	03-Dec-25	Room 102 (Above Ceiling)	Tar-coated insulation @ fittings		X
065-031225-3C	03-Dec-25	Room 133 (Above Ceiling)	Tar-coated insulation @ fittings		X
065-031225-4A	03-Dec-25	Room 102 (Above Ceiling)	Parging cement @ pipe hangers		X
065-031225-4B	03-Dec-25	Room 102 (Above Ceiling)	Parging cement @ pipe hangers		X
065-031225-4C	03-Dec-25	Room 102 (Above Ceiling)	Parging cement @ pipe hangers		X
Relinquished By: Faiq Amir  Date: 03-Dec-25				Comments: Stop further analysis for each alpha numerical set once asbestos is identified by PLM method. e-mail results to: yangting.shek@utoronto.ca With CC to: ehs.office@utoronto.ca irfan.miraj@utoronto.ca doug.colby@utoronto.ca faiq.amir@utoronto.ca a.greco@utoronto.ca	
Received By: Anna Bradford  Signature:  Date: Dec 9 '25					
Analyzed By: Jayoda Perera  Signature:  Date: Dec 15 '25					
<i>muu CM Dec 10/25 9:10</i>					



N

University
of Toronto

Office of
Space
Management



Dentistry
Building

Bldg #65

1st Floor

97/08

Revisions

98/01
02/02
06/03
17/03

DWG. #

2 of 8

10 20 30 40 50 60

Scale(ft)

2 4 6 10 20

Scale(m)



APPENDIX D

**Mercury Vapour Spot Sampling Report - October 2021” by Safetech
Environmental Ltd.**

MERCURY VAPOUR SPOT SAMPLING REPORT

P065-21-50

**Dentistry Clinic 2 – Faculty of Dentistry
124 Edward Street
Toronto, Ontario**

Prepared for:

**Adryanne Quenneville, M.Arch, OAA
Project Manager**

**University of Toronto, University Planning, Design & Construction
255 McCaul Street, 4th Floor
Toronto, Ontario
M5T 1W7**

Performed By:

Safetech Environmental Limited



**Derek Tam, HBSc, BASc, AMRT, CIH
LEED Green Associate
Senior Occupational Hygienist**

Reviewed By:



**Michael Mitanis, BASc
Operations Manager – Occupational Hygiene Group**

Safetech Project Number 1-5250609

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Appendix A
Appendix B

Site Photographs
Certificate of Calibration

January 16, 2026

University of Toronto, University Planning, Design & Construction
255 McCaul Street, 4th Floor
Toronto, Ontario
M5T 1W7

Attention: Adryanne Quenneville, M.Arch, OAA
Project Manager

Re: Mercury Vapour Spot Sampling Report
P065-21-50: Dentistry Clinic 2 – Faculty of Dentistry
124 Edward Street, Toronto, Ontario

1.0 BACKGROUND

On December 22nd, 2025, personnel from Safetech Environmental Limited (Safetech) conducted instantaneous spot testing for mercury vapours within Dentistry Clinic 2 on the 2nd floor of The Faculty of Dentistry Building located at 124 Edward Street, Toronto, Ontario.

Our assessment was performed at the request of Adryanne Quenneville, Project Manager for the University of Toronto in order to determine potential concentrations of mercury vapours (if any) within all areas where sink fixtures and associated drains are present where scheduled renovations are expected to be performed.

The main objective of our assessment was to determine if there was a likelihood of any overexposure to mercury vapours as a result of past use/accidental release of elemental mercury as a preventative measure prior to the onset of upcoming demolition/renovation activities within the areas investigated. Our assessment consisted of a visual assessment within the investigated areas to identify any visible mercury residues on building surfaces primarily near sinks. In addition, spot sampling for mercury vapours was conducted areas where sink fixtures, lab drains, and floor drains were present in areas scheduled for renovation using direct reading instrumentation to further determine if there were any significant sources of mercury and for comparison with regulated occupational exposure limits.

2.0 REGULATED EXPOSURE LIMITS

In Ontario, mercury is classified as a designated substance. A designated substance is defined as a biological, chemical or physical agent or combination of agents for which a regulation has been made to prohibit, regulate, restrict, limit or control worker exposure. The designated substances regulation applies to a class of agents and sets out requirements governing exposure limits, use of respirators, air monitoring, medical surveillance and record keeping. These regulations apply to employers and workers at workplaces where the designated substance is present, produced, processed, used, handled, or stored in the workplace and where a worker is likely to inhale, ingest or absorb some quantity of the contaminant. Ontario Regulation 490/09 entitled “Designated Substances”, as most recently amended by O.Reg. 259/10 and made under the Occupational Health and Safety Act (R.R.O. 1990, Reg. 843) governs the acceptable exposure and precautionary requirements of 11 designated substances including mercury.

2.1 Mercury in Air

For provincially regulated industrial facilities in Ontario, exposure to mercury vapours is regulated as a designated substance under Ontario Regulation 490/09. This regulation indicates a time-weighted average (TWA) exposure limit of 0.025 mg/m³ (or 25 µg/m³) for all forms of mercury (including elemental mercury) except for alkyl compounds.

The TWA is a contaminant concentration considered acceptable for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse health effects. The STEL is the maximum airborne concentration of a chemical agent to which a worker may be exposed in any 15-minute period, no more than four times a day during an 8-hour work shift and with at least one hour between exposures. The C is the maximum airborne concentration of a chemical agent to which a worker may be exposed at any time. If neither a STEL nor a C exists, peak exposure values based on the TWA should be applied. These limits indicate that exposure may exceed 3 times the TWA for no more than fifteen minutes at a time, but under no circumstances can exposure exceed 5 times the TWA when measured as a 15-minute exposure limit.

As indicated, exposure limits provided in Ontario Regulation 490/09 have been developed to protect workers in industrial environments. They are intended to protect against the onset of specific illnesses or health effects and in many instances are not intended to protect against irritation or to limit odours. In addition, the limits are intended to protect “healthy workers.” Individuals having pre-existing medical conditions, severe allergies, chemical sensitivities and other such conditions would not be expected to work in a manufacturing environment. However, these individuals may work in non-industrial settings such as commercial, institutional and residential environments. For

these reasons, exposure limits provided in Ontario Regulation 490/09 are considered to have limited applicability for an institutional facility during normal daily operations, but would be applicable for workers on demolition projects.

3.0 METHODOLOGY

Our assessment was conducted in the designated space for all main sink fixtures (where present). Our investigation included a visual assessment and spot sampling for mercury vapours.

3.1 Visual Assessments

A visual walkthrough inspection of the above noted rooms was performed to identify conditions present at the time of our assessment. The intent of the walkthrough inspection was to acquire an overview of building layout, and to look for potential sources of mercury release or evidence of visible mercury residues on building surfaces. The inspection identified typical building materials, furnishings and equipment present on which mercury residues may be present. Particular attention was given to areas where sink fixtures or drains were located.

3.2 Spot Sampling for Mercury Vapours

Instantaneous spot sampling for mercury vapours was conducted concurrently with our visual inspection to obtain measurements of the airborne concentration of mercury vapour at a given moment in time. These measurements were taken from each sink drain located within the above noted rooms scheduled to undergo upcoming renovation activities.

Direct readings were obtained using a portable Jerome 431-X Mercury Vapour Analyzer (Jerome). This portable device is designed to measure mercury vapours in real time and has an operating range of 0.003 mg/m³ to 0.999 mg/m³. The device was operated in "Sample Mode", in which discrete 12-second air samples were taken at each sampling location to obtain a measurement of the mercury concentration with an accuracy of $\pm 5\%$ at 0.1 mg/m³.

4.0 RESULTS

4.1 Visual Assessments

The clinic was equipped with multiple dentistry stations with sinks along the east and west walls. Two x-ray areas were found to be divided into eight rooms in each area with sinks along the north and south walls of each room. Our visual inspection conducted at the time of testing did not identify any obvious visible evidence of mercury residues on flooring finishes, counter spaces (where present), equipment or other surfaces.

Sink fixtures were not identified to have glass sink traps, and therefore only a limited visual inspection could be carried out. Minor areas of dust and debris accumulation were identified on horizontal surfaces, primarily flooring underneath sinks and within sink fixture cabinetry, appearing to be present on surfaces that less likely to be frequently cleaned.

4.2 Spot Sampling for Mercury Vapours

Spot sampling for mercury using the Jerome analyzer was conducted in all main sink drains located within Dentistry Clinic 2. Results of instantaneous screening for mercury vapours using the Jerome analyzer are summarized below in Table I.

TABLE 1
Summary of Mercury Vapour Spot Sampling Results
Dentistry Clinic 2 – Faculty of Dentistry
University of Toronto
December 22, 2025

Location	Fixture	Concentration (mg/m ³)
Occupational Exposure Limit (O. Reg 490/09): 0.025 mg/m³		
Dentistry Clinic 2		
By Doffing station	Sink	<0.003
	Sink Cabinet Interior	0.003
By Room 207 D	Sink	0.005
	Sink Cabinet Interior	<0.003
By Dental Chair 243	Sink	0.004
	Sink Cabinet Interior	0.000
By Dental Chair 249	Sink	0.011
	Sink Cabinet Interior	<0.003
By Room 266A	Sink	0.019
	Sink Cabinet Interior	0.011

By Room 208	Sink	0.008
	Sink Cabinet Interior	0.005
By Dental Chair 278	Sink	0.007
	Sink Cabinet Interior	<0.003
By Dental Chair 272	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 260	Sink #6	<0.003
	Sink #6 Cabinet Interior	<0.003
By Dental Chair 254	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 248	Sink #5	<0.003
	Sink #5 Cabinet Interior	<0.003
By Dental Chair 242	Sink #4	0.003
	Sink #4 Cabinet Interior	<0.003
By Dental Chair 230	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 224	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 218	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Dental Chair 206	Sink	<0.003
	Sink Cabinet Interior	<0.003
Sink #1	Sink	<0.003
	Sink Cabinet Interior	<0.003
Mixed Solutions Counter	Sink	<0.003
	Sink Cabinet Interior	<0.003
By purple prosthodontic sign	Sink	<0.003
	Sink Cabinet Interior	<0.003
By instrument cleaning area	Sink	<0.003
	Sink Cabinet Interior	<0.003
North of instrument cleaning area	Sink	<0.003
	Sink Cabinet Interior	<0.003
NE eyewash station	Sink	<0.003
	Sink Cabinet Interior	<0.003
By NE Exit	Sink	<0.003
	Sink Cabinet Interior	<0.003
Room 207A	Sink	0.003
	Sink Cabinet Interior	<0.003

Room 207B	Sink	<0.003
	Sink Cabinet Interior	0.003
Room 225	Sink	<0.003
	Sink Cabinet Interior	0.003
	Fume Hood Interior	<0.003
	Fume Hood Cabinet	<0.003
	Fume Hood Exterior	<0.003
Room 224	Sink	0.003
	Sink Cabinet Interior	<0.003
By computer in Room 207C	Sink	<0.003
	Sink Cabinet Interior	<0.003
By ventilation duct in Room 207C	Sink	<0.003
	Sink Cabinet Interior	<0.003
By Emergency gas shutoff	Sink	<0.003
	Sink Cabinet Interior	<0.003
By A1/23 Socket	Sink	<0.003
	Sink Cabinet Interior	<0.003
By A1/27 Socket	Sink	<0.003
	Sink Cabinet Interior	<0.003
X-ray Room 1	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 2	South Sink	0.01
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	0.003
X-ray Room 3	North Sink	0.041
	North Sink Cabinet Interior	0.008
	South Sink	0.006
	South Sink Cabinet Interior	0.005
X-ray Room 4	South Sink	0.004
	South Sink Cabinet Interior	<0.003
	North Sink	0.004
	North Sink Cabinet Interior	<0.003

X-ray Room 5	North Sink	0.029
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 6	South Sink	0.01
	South Sink Cabinet Interior	<0.003
	North Sink	0.004
	North Sink Cabinet Interior	<0.003
X-ray Room 7	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 8	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 9	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 10	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 11	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray room 12	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 13	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003

X-ray Room 14	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
X-ray Room 15	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
X-ray Room 16	South Sink	<0.003
	South Sink Cabinet Interior	<0.003
	North Sink	<0.003
	North Sink Cabinet Interior	<0.003
Room 217		
Lab 4	North Sink	<0.003
	South Sink	0.003
	Sink Cabinet Interior	<0.003

5.0 CONCLUSIONS AND DISCUSSION OF RESULTS

The assessment conducted on December 22, 2025, did not identify any obvious visible evidence of mercury residues on building surfaces within the areas assessed at Dentistry Clinic 2 of the Faculty of Dentistry Building. Accessible drain and sink plumbing traps could not be adequately assessed due to physical restrictions associated with the interstitial space where such fixtures are suspected to be present. In addition, the room directly beneath the laboratory was not assessed due to ongoing occupancy and continued operation of the space.

Spot sampling for mercury vapours, as summarized in Table 1, indicated that the majority of measured concentrations were either below the direct-reading equipment's detection limit or below the applicable occupational exposure limit of 0.025 mg/m³. The only exceptions were instantaneous readings obtained at the North Sinks of X-ray Rooms 3 and 5, where concentrations of 0.041 mg/m³ and 0.029 mg/m³, respectively, were identified.

Although these values exceeded the 8-hour TWA exposure limit, no visible mercury residues were observed on sink surfaces or in adjacent areas. It should be noted that these measurements represent short-duration spot readings and are not indicative of sustained time-weighted average exposure conditions. Elevated results may reflect localized or short-lived conditions and do not, on their own, confirm the presence of elemental mercury within sink fixtures or associated plumbing systems.

As screening activities identified slightly elevated instantaneous mercury vapour concentrations in X-ray Rooms 3 and 5 (relative to other areas assessed), the following precautionary measures are recommended during cabinetry removal and renovation activities in these locations:

- Conduct initial clean-up using a Mercury Recovery Vacuum Cleaner and thoroughly wipe all surfaces with TSP (Tri-sodium Phosphate) Solution.
- All remaining surfaces are to be vacuumed using a Mercury Recovery Vacuum Cleaner System.
- Apply mercury amalgamation powder to floors and other horizontal surfaces in these areas where mercury contamination may be present.
- Final wash surfaces with clean hot water and a detergent solution.
- Decontaminate remaining vertical and horizontal surfaces within the work area as indicated above.

The above noted work activities should also be performed if conditions change during the course of removal and suspect mercury is found to be present during dismantling activities. Any of the above work (if deemed necessary) is to be in compliance with Ontario Regulation 490/09 – Designated Substances, made under The Occupational Health and Safety Act and local requirements pertaining to mercury, provided that in case of conflict with these procedures, the most stringent requirements shall apply. All materials disposed of as contaminated waste are to conform to requirements of Regulation 347/90 as amended by O. Reg. 326/03 - General Waste Management under Environmental Protection Act for Waste Management, transporting and disposal of hazardous waste. Ensure waste is disposed of in accordance with the University of Toronto's Laboratory Hazardous Waste Management Manual.

6.0 LIMITATIONS

The information and recommendations detailed in this report were carried out by trained professional and technical staff in accordance with generally accepted environmental and industrial hygiene work practices and procedures. Recommendations made in this report have been made in the context of existing industry accepted guidelines, which were in place at the date of this report.

In preparing this report, Safetech Environmental Limited (Safetech) relied on information supplied by others, including independent laboratories and testing services. Except as expressly set-out in this report, Safetech has not made any independent verification of such information.

The collection of samples at the Site was consistent with the scope of work agreed-upon with the person or entity to whom this report is addressed and the information obtained concerning prior site investigations. As conditions between samples may vary,

the potential remains for the presence of unknown additional contaminants for which there were no known indicators.

Conclusions are based on site conditions at the time of inspection and can only be extrapolated to an undefined limited area around inspected locations. The extent of the limited area depends on building construction and conditions. Safetech cannot warrant against undiscovered environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. Safetech accepts no responsibility for damages suffered by third parties as a result of actions based on this report.