

HAZARDOUS MATERIALS SURVEY AND 2023 REASSESSMENT 548 KING EDWARD AVENUE, OTTAWA, ON



Project No.: Z2021102HZ/ CCC-230252-00

Prepared for:

University of Ottawa

Prepared by:

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Date:

X date, 2023

McINTOSH PERRY

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REASSESSMENT SURVEY 2023

This building is unoccupied and has been since the previous reassessment in 2022. There are no changes to the quantity, condition or location of any previously identified Hazardous Building Materials, including asbestos.

EXECUTIVE SUMMARY

McIntosh Perry Limited (**MPL**) was retained by the University of Ottawa to complete a Hazardous Materials Survey for the residence building located at 548 King Edward Avenue, Ottawa, Ontario. The survey was conducted on September 2nd, 2020. **The Reassessment Survey was conducted on x date, 2023.**

The purpose of the survey was to determine the presence of building materials containing Designated Substances and other hazardous materials, as defined under the Ontario Occupational Health and Safety Act. Designated Substances are eleven chemical agents prescribed under Ontario Regulation 490/09. In addition, a visual assessment was conducted for the presence of polychlorinated biphenyls (PCBs), radioactive materials, ozone depleting-substances (ODSs), other halocarbons and mould.

Based on the assessment conducted by MPL, the following asbestos-containing materials (ACMs) were identified or suspected to be present in the building:

Table A: Summary of Asbestos-Containing Materials Identified

Material Description	Friable?	Location	Type of Asbestos
Drywall Joint Compound	-	Throughout Building	Chrysotile
Mechanical Pipe Insulation	Friable	Specific Areas Only	Chrysotile
Parquet Flooring	-	Specific Areas Only	Suspected

Note: Please refer to the complete report for specific details and recommendations.

All repairs or removal of ACMs must be conducted according to Ontario Regulation 278/05, Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act. Asbestos-containing waste must also be handled and disposed of according to Ontario Regulation 347/90 as amended – made under the Environmental Protection Act. Any suspect building materials encountered that were not assessed as part of this survey should be assumed to contain asbestos until proven otherwise by analytical testing;

Sub-trades working with or in close proximity to ACMs should be informed of their presence;

Given that ACMs have been identified and will likely remain in place, an Asbestos Management Plan is required, and an ACMs inventory must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities.

Based on the assessment conducted by MPL, the following Designated Substances and Hazardous Materials were identified or suspected to be present in the building:

Table B: Summary of Designated Substances & Hazardous Materials Identified

Material Description	Location
Lead Paint	Throughout Building
Mercury Vapour	Specific Equipment
Mercury Liquid	Specific Equipment
Silica	Throughout Building
Ozone Depleting-substances	Specific Equipment
PCBs	Specific Equipment
Radioactive Materials	Specific Equipment

Note: Please refer to the complete report for specific details and recommendations.

Designated Substances are regulated under Ontario Regulation 490/09 — Designated Substances, made under the Ontario Health and Safety Act, which applies to controlling designated substances in the workplace.

In addition to Ontario Regulation 490/09, the following guidelines must also be adhered to when conducting work activities that involve disturbance of the materials mentioned above:

- Guideline: Lead on Construction Projects, issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour
- Guideline: Silica on Construction Projects issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour.
- Environmental Abatement Council of Canada (EACC) Lead Abatement Guidelines.

Prior to any renovations or demolition activities throughout the building, designated substances and hazardous materials must be decommissioned by a licensed contractor such that they are contained and not released to the environment during decommissioning as per O. Reg. 347/09- made under the Environmental Protection Act.

Any suspect building materials encountered that were not assessed as part of this survey should be assumed to contain designated substances until proven otherwise by analytical testing.

This report should be made available to contractors tendering on any renovation or demolition work. In turn, all contractors requesting tenders from subcontractors shall furnish this report to subcontractors.

This executive summary is not to be used alone. This report should be reviewed in its entirety.

X date, 2023

University of Ottawa
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via email: martine.bergeron@uottawa.ca

Attention: Martine Bergeron, Senior Specialist, Occupational Health and Safety

Re: 548 King Edward Avenue, Ottawa, Ontario
Hazardous Materials Survey and 2023 Reassessment
McIntosh Perry Limited Reference No. Z2021102HZ/ CCC-230252-00

1.0 INTRODUCTION

Under your instructions, McIntosh Perry Limited (MPL) conducted a Hazardous Materials Survey and 2023 Reassessment at the residence building at 548 King Edward Avenue, Ottawa, Ontario. The site is situated on the west side of King Edward Avenue between Thomas Moore Private and Laurier Avenue East. The survey of the building was conducted on September 2nd, 2020. **The Reassessment Survey was conducted on x date, 2023.**

The purpose of the survey was to determine the presence of building materials containing Designated Substances and other hazardous materials, as defined under the Ontario Occupational Health and Safety Act. Designated Substances are eleven chemical agents prescribed under Ontario Regulation 490/09. In addition, a visual assessment was conducted for the presence of polychlorinated biphenyls (PCBs), radioactive materials, ozone depleting-substances (ODSs), other halocarbons and mould.

MPL completed the following,

- Visual review of the building to identify materials which could contain Designated Substances and hazardous materials;
- Bulk sampling and analysis of building materials suspected of containing asbestos (if required);
- Bulk sampling and analysis of representative paints and finishes suspected of containing lead (if required);
- Review of previously completed Hazardous Materials Survey(s) and historical building record(s); and,
- Recommendations for appropriate action where required.

2.0 PROPERTY DESCRIPTION

The subject building is a two-storey building. The building was constructed in 1900 and covered approximately 2,000 square feet. The subject building was observed to be constructed with a stone and mortar foundation, wood frame construction, siding and brick cladding and an asphalt shingle roof. The interior walls were comprised of plaster, drywall, and stone masonry. Throughout the subject building, ceilings were observed to be either plaster, wood, or drywall. The floors were generally a combination of ceramic tiles, laminate, vinyl floor tiles, concrete, and parquet flooring.

3.0 FINDINGS & RECOMMENDATIONS

Designated Substances

3.1 Asbestos

Findings

A total of twenty-six (26) bulk samples were collected during the survey and sent to an accredited laboratory for analysis. A summary of potential asbestos-containing samples collected along with the sample location, type and friability are presented in Table 1.

The The Laboratory Certificates of Analysis for asbestos are included in Appendix C.

Table 1:
Asbestos Laboratory Results

Sample ID	Location	Material	Type and Content	Friability
BS 1.1	Basement Stairs	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 1.2	Room 201	Plaster	None Detected	N/A
BS 1.3	Room 201	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 1.4	Room 200	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 1.5	Room 205	Plaster	None Detected	N/A
BS 1.6	Basement Stairs	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 1.7	Room 200	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 2.1	Room B1	Brick Mortar (Grey Brick)	None Detected	N/A
BS 2.2	Room B1	Brick Mortar (Grey Brick)	None Detected	N/A
BS 2.3	Room B1	Brick Mortar (Grey Brick)	None Detected	N/A

Sample ID	Location	Material	Type and Content	Friability
BS 3.1	Room B2	Brick Mortar (Red Brick)	None Detected	N/A
BS 3.2	Room B2	Brick Mortar (Red Brick)	None Detected	N/A
BS 3.3	Room B2	Brick Mortar (Red Brick)	None Detected	N/A
BS 4.1	Basement Stairs	Drywall Joint Compound	None Detected	N/A
BS 4.2	Room 201	Drywall Joint Compound	None Detected	N/A
BS 4.3	Room 205	Drywall Joint Compound	None Detected	N/A
BS 4.4	Room 207	Drywall Joint Compound	None Detected	N/A
BS 4.5	Room 104	Drywall Joint Compound	None Detected	N/A
BS 4.6	Room 205	Drywall Joint Compound	None Detected	N/A
BS 4.7	Room 201	Drywall Joint Compound (White)	None Detected	N/A
		Drywall Joint Compound (Tan)	2% Chrysotile	-
BS 5.1	Room 103	VFT (12"x12"-Grey, White and Black)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 5.2	Room 103	VFT (12"x12"-Grey, White and Black)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 5.3	Room 103	VFT (12"x12"-Grey, White and Black)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 6.1	Room 103	Ceramic Tile Grout (Pink Layer 1)	None Detected	N/A
		Ceramic Tile Grout (Pink Layer 2)	None Detected	N/A
BS 6.2	Room 103	Ceramic Tile Grout (Pink Layer 1)	None Detected	N/A
		Ceramic Tile Grout (Pink Layer 2)	None Detected	N/A
BS 6.3	Room 103	Ceramic Tile Grout	None Detected	N/A

N/A – Not Applicable

VFT – Vinyl Floor Tiles

Stop Positive – Material considered asbestos-containing per O. Reg. 278/05.

Please refer to Appendix E – Asbestos-Containing Materials Checklist for material conditions, quantities (where applicable), and recommended actions.

The following building materials (if present) were investigated for asbestos content:

3.1.1 Fireproofing

No fireproofing was observed throughout the subject building.

3.1.2 Mechanical Pipe Insulation

3.1.2.1 Mechanical Pipe Straight Insulation

Previously identified aircell pipe insulation was observed throughout the basement of the subject building. The laboratory analytical results of samples collected indicate that this material **contains 65% Chrysotile asbestos**. This material is considered to be friable and was observed to be in poor condition.

3.1.2.2 Mechanical Piping Elbows/Fittings Insulation

Previously identified pipe elbow/fitting insulation was observed throughout the basement of the subject building. The laboratory analytical results of the samples collected indicate that this material **contains 55% Chrysotile asbestos**. This material is considered to be friable and was observed to be in poor condition.

3.1.2.3 Mechanical Piping Hangers Insulation

No mechanical pipe hanger insulation was observed throughout the subject building.

3.1.2.4 HVAC Duct Insulation

No HVAC duct insulation was observed throughout the subject building.

3.1.2.5 Other Mechanical Insulation

No other mechanical insulation was observed throughout the subject building.

3.1.3 Flexible Duct Connector

No flexible duct connectors were observed throughout the subject building.

3.1.4 Heat Shield or Heat Shield Insulation

No heat shield insulation was observed throughout the subject building.

3.1.5 Texture Finishes

No texture finishes were observed throughout the subject building.

3.1.6 Plaster

Plaster was observed throughout the building. The analytical results of the plaster samples collected indicate that this material does not contain asbestos.

3.1.7 Grey Sheeting

No grey sheeting was observed throughout the subject building.

3.1.8 Drywall Joint Compound

Drywall joint compounds were observed throughout the subject building. The laboratory analytical results of drywall joint compound samples collected indicate that this material **contains 2% Chrysotile asbestos**. Since drywall joint compound is a homogeneous material, all areas must be treated as asbestos-containing unless additional bulk sampling and analysis until proven otherwise. This material was observed to be in good condition.

3.1.9 Ceiling Tiles

No ceiling tiles were observed throughout the subject building.

3.1.10 Vinyl Floor Tiles

Vinyl floor tile (12"x12"-Grey, White and Black) was observed and sampled in the kitchen (Room 103). The laboratory analytical results of vinyl floor tile samples collected indicate that this material does not contain asbestos. The associated mastic (Yellow) was also determined not to contain asbestos.

3.1.11 Vinyl Sheet Flooring

No Vinyl Sheet Flooring was observed throughout the subject building.

3.1.12 Parquet Flooring

To avoid damage and compromising the integrity of parquet flooring, no bulk samples of the flooring materials were collected. Prior to removal and/or replacement, parquet flooring materials should be examined and tested for asbestos content. Parquet flooring materials should be considered to contain asbestos until bulk samples and analysis until proven otherwise.

3.1.13 Brick/Stone Mortar

Brick/Stone mortar was observed and sampled throughout the subject building as follows:

- Brick/stone mortar (Grey Brick) was observed and sampled in the basement. The laboratory analytical results indicate that this material does not contain asbestos.
- Brick/stone mortar (Red Brick) was observed and sampled in the basement. The laboratory analytical results indicate that this material does not contain asbestos.

3.1.14 Concrete Block Mortar

No concrete block mortar was observed throughout the subject building.

3.1.15 Ceramic Wall / Floor Tile Grout

Ceramic tile grout was observed and sampled in the kitchen (Room 103). The laboratory analytical results indicate that this material does not contain asbestos.

3.1.16 Transite (Asbestos Cement)

No transite was observed throughout the subject building.

3.1.17 Caulking

No caulking materials were observed throughout the subject building.

3.1.18 Cementitious Coating

No cementitious coating was observed throughout the subject building.

3.1.19 Glazing

No glazing materials suspected of containing asbestos were observed throughout the subject building.

3.1.20 Fire Doors

No fire doors were observed throughout the subject building.

3.1.21 Roofing Material

Roofing material (Shingles) was previously sampled in the subject building. The laboratory analytical results indicated that these materials do not contain asbestos.

Recommendations

- ACMs identified to be in poor condition must be repaired/removed immediately, following Type 1/2/3 asbestos abatement work procedures as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- Materials identified to contain asbestos in good condition and not pose a risk to workers or occupants can be managed in place. Prior to renovation/demolition activities that may disturb the ACMs, these materials must be removed following appropriate Type 1/2/3 asbestos abatement work procedures as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- Please refer to Appendix E – Asbestos-Containing Materials Checklist for material conditions, quantities (where applicable), and recommended actions;
- Prior to renovation/demolition of materials which are assumed to be asbestos-containing (suspect materials which were not sampled, i.e., roofing materials, brick mortar, concrete block mortar, ceramic wall/floor tile grout), these materials must either be tested for asbestos content or removed following appropriate asbestos abatement work procedures (Type 1/2/3) as detailed in O. Reg. 278/05 and disposed of as asbestos waste under O. Reg. 347;
- All repairs or removal of ACMs must be conducted according to Ontario Regulation 278/05, Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Occupational Health and Safety Act. Asbestos-containing waste must also be handled and disposed of according to Ontario Regulation 347/90 as amended – made under the Environmental Protection Act. Any suspect building materials encountered that were not assessed as part of this survey should be assumed to contain asbestos until proven otherwise by analytical testing;
- Sub-trades working with or in close proximity to ACMs should be informed of their presence; and
- Given that ACMs have been identified and will likely remain in place, an Asbestos Management Plan is required, and an ACMs inventory must be kept on site. All ACMs must be routinely inspected to ensure

no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities.

3.2 Lead

Findings

3.2.1 Paint Finishes

A total of five (5) paint samples from the subject building were collected and analyzed for lead content. Results of bulk sampling testing, including testing previously completed by others, are summarized in Table 2, and the Laboratory Certificate of Analysis can be found in Appendix C.

Table 2:
Lead Sampling Locations and Laboratory Results

Sample I.D.	Location	Material	Colour	Lead Concentration Weight by Conc. (%)
PB1	Room B1	Floor Paint	Grey	<0.0080
PB2	Room B1	Stair Paint	Red	<0.0080
PB3	Room 100A	Wall Paint	White	<0.0082
PB4	Room 100A	Stair Paint	Grey	1.4
PB5	Room 101	Wall Paint	Brown	<0.0083
Previously Identified Lead Paint Finishes				
137-1-LBP-050707-01	Exterior	Doorframe Paint	Brown	16
137-1-LBP-050707-02	Corridor – 1 st Floor	Doors, Frames, Stairs Paint	Dark Red	5
137-1-LBP-050707-03	1 st Bedroom – 1 st Floor	Frames, Trim, Radiator Paint	Yellow	0.18
137-1-LBP-050707-04	Middle Bedroom – 1 st Floor	Door, Frames, Trim Paint	White	7
137-2-LBP-050707-05	Bathroom – 2 nd Floor	Window Frame, Door, Trim, Radiator Paint	Green	0.34

The paint finishes highlighted in blue in the above table was determined to contain low concentrations of lead, which are less than or equal to 0.1%. These paint finishes were observed to be in good condition.

The paint finishes highlighted in pink in the above table are considered lead-containing paints or surface coatings with concentrations greater than 0.1% lead by weight. These paint finishes were observed to be in good condition.

All other paints throughout the subject building that are not mentioned in this report must be considered to be lead-containing unless sampling and analysis until proven otherwise.

The The The The Laboratory Certificate of Analysis for the paint sample is also included in Appendix C.

3.2.2 Battery Packs

No battery packs were identified throughout the subject building.

Lead may also be present in the following materials in the building:

- Solder used on copper domestic water lines;
- Solder used in bell fittings for cast iron pipes;
- Solder used in electrical equipment;
- Ceramic tile glaze; and
- Concrete and mortar products, etc.

Recommendations

Paints identified to contain lead that is in poor condition must be immediately repaired and/or stabilized following a minimum Type 1/2 lead abatement procedures as per OMOL “Lead on Construction Project” dated April 2011.

Paints identified to contain lead that are in good condition and do not pose a risk to workers or occupants can be managed in place.

Detailed worker protection protocols are outlined in the OMOL Guideline “Lead on Construction Projects” dated April 2011. Generally, removing the lead-based paint using a chemical gel or paste or a power tool equipped with a HEPA filter is considered a Type 1 operation. Removing lead-based paint by scraping or sanding using non-powered hand tools is considered a Type 2 operation. The removal of lead-based paint using abrasive blasting or power tools without a HEPA filter is considered a Type 3 operation and requires the most stringent worker protection protocols (similar to asbestos). Furthermore, high temperature cutting or welding would also require Type 3 Operations under the Guideline for Lead on Construction Projects. If this type of work is required, it may be prudent to chemically remove the lead paint in selected locations prior to performing any high temperature cutting or welding.

All removed lead materials must follow the Ministry of Labour and Environmental Abatement Council of Canada (EACC) Lead Guidelines.

Please refer to Appendix F –Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

Precautions should be taken as required during major renovations and demolition projects to ensure that workers' exposure levels to airborne lead do not exceed 0.05 mg/m³. This can be achieved by:

- providing workers with proper training;
- providing the workers with respiratory protection;
- wetting the surface of the materials to prevent dust emissions; and,
- providing workers with hygiene facilities to properly wash prior to exiting the work area.

Sub-trades working with or in close proximity to lead-based paint should be informed of its presence.

All waste material must be handled and disposed of according to the Revised Regulation of Ontario 347/90 as amended – made under the Environmental Protection Act. Lead waste generated may also be subject to the Leachate Criteria (Schedule 4) of this regulation.

3.3 Mercury

Findings

3.3.1 Thermostat Switches

One thermostat containing liquid mercury was previously observed throughout the subject building.

3.3.2 Fluorescent Light Tubes

Fluorescent light fixtures were observed throughout the subject building.

3.3.3 Pressure Gauges and Float Switches

No pressure gauges or float switches containing liquid mercury were identified throughout the subject building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

Precautions must be taken to prevent mercury liquid/vapours from becoming airborne during building demolition. Mercury exposure is regulated under Ontario Regulation 490/09, Designated Substances - made under the Occupational Health and Safety Act." Prior to renovations to the building, all mercury-containing fluorescent light tubes must be removed and stored in a safe, secure location and/or properly disposed of under R.R.O. 1990, Regulation 347 General – Waste Management, made under the Environmental Protection Act.

3.4 Silica

Findings

Silica is expected to be present in building materials such as concrete, brick, mortar and ceramic tiles throughout the structures. Free crystalline silica (α -Quartz) may be a component in ceiling tiles and gypsum board. Silica (including free crystalline silica) may also be a component of concrete and brick surfaces noted in the building.

Recommendations

Please refer to Appendix F –Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

Precautions should be taken as required during major renovations and demolition projects on concrete (i.e. coring through concrete slabs, masonry demolition, etc.) to ensure that workers' exposure levels to airborne silica do not exceed 0.05 mg/m³.

This can be achieved by:

- providing workers with proper training;
- providing the workers with respiratory protection;
- wetting the surface of the materials to prevent dust emissions; and,
- providing workers with facilities to properly wash prior to exiting the work area.

Demolition work that is likely to impact silica-containing materials should be carried out under the requirement detailed in the Ontario Ministry of Labour document entitled "Guideline: Silica on Construction Projects," dated April 2011.

Other Hazardous Materials

3.5 Polychlorinated Biphenyls (PCBs)

Findings

3.5.1 Light Ballasts

The subject building is illuminated by fluorescent lights. At the time of the site visit, MPL could not safely assess the light ballasts. As such, PCB-containing ballasts may be present throughout the building.

3.5.2 Transformers

No PCBs containing electrical transformers were observed throughout the subject building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

Prior to any renovations, all light ballasts containing or suspected of containing PCBs will be affected by the work, must be decommissioned by a licensed contractor such that PCBs are contained and not released to the environment during decommissioning and properly disposed of.

3.6 Ozone Depleting-Substances (ODSs) and Other Halocarbon

Findings

A visual assessment for equipment potentially containing ODSs and other halocarbons was conducted. Equipment containing ODSs or other halocarbons, such as refrigerators, were observed throughout the subject building.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, approximate quantities (where applicable), and recommended actions.

Under the management of a licensed contractor, equipment containing R-134a does not represent a significant threat to human health or the environment; however, a licensed contractor must decommission equipment such that CFCs are contained and not released to the environment during servicing or operation.

3.7 Radioactive Materials

Findings

A visual assessment of the subject building was conducted to determine if any electrical components containing radioactive materials were present. Smoke detectors were observed throughout the subject building, which contained small quantities of radioactive material.

Recommendations

Please refer to Appendix F – Hazardous Materials Checklist for equipment conditions, quantities (where applicable), and recommended actions.

The radioactive sources in smoke alarms are sealed and contained within a metal case inside the smoke detector and must not be damaged or tampered with. These materials do not pose a hazard as long as they remain contained and properly disposed of at the time of removal or replacement.

Prior to any renovations or demolition of the building, all equipment containing radioactive materials must be decommissioned by a licensed contractor such that radioactive materials are contained and not released to the environment during decommissioning as per O.Reg. 347/09.

3.8 Underground and Above Ground Storage Tanks (USTs and ASTs)

Findings

A visual survey of the subject building was conducted to determine if any USTs and ASTs were present. No USTs and ASTs were present throughout the subject building.

Recommendations

Since no underground and/or above-ground storage tanks (USTs and ASTs) were observed or suspected to be present during the site survey, no further action is required.

3.9 Mould

Findings

3.9.1 Mould

A visual survey of the subject building was conducted to determine if any mould was present. No mould growth was identified in any areas throughout the subject site.

3.9.2 Water Damage

A visual survey of the subject building was conducted to determine if water damage was present. No water damage was identified in any areas throughout the subject site.

Recommendations

Since no suspected mould growth or water-damaged materials were observed or suspected to be present during the site survey, no further action is required.

This report should be made available to contractors tendering on any renovation or demolition work. In turn, all contractors requesting tenders from subcontractors shall furnish this report to subcontractors.

4.0 GENERAL CONSIDERATIONS AND LIMITATIONS

The information presented in this report is based on information provided by others, direct visual observation made by personnel with **McIntosh Perry Limited (MPL)**, and the results of laboratory testing as identified herein.

It should be noted that there might be designated substances in locations not visible during our investigation. In the event such material is encountered during demolition operations in the building, this material should be tested and dealt with accordingly.

The findings detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

MPL does not certify or warrant the environmental status of the property nor the building on the property.

Please note that the passage of time affects the information provided in the report. Environmental conditions of a site can change. Opinions relating to the site conditions are based upon information that existed at the time that the conclusions were formulated.

The client expressly agrees that it has entered into this agreement with MPL, both on its own behalf and as agent on behalf of its employees and principals.

The client expressly agrees that MPL's employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the client expressly agrees that it will bring no proceedings and take no action in any court of law against any of MPL's employees or principals in their personal capacity.

We trust that we have detailed our findings clearly and that we have satisfactorily addressed the scope of work you require at this time. In the event you wish us to review our findings with you, or require our services further in this regard, please do not hesitate to contact our office.

Yours truly,

MCINTOSH PERRY LIMITED

Jane Zhang, M.Sc.
Hazardous Materials, EH&S Technician
Hazardous Materials/ Environmental Health & Safety

John Tufts, B.Sc.
Project Manager
Hazardous Materials/ Environmental Health & Safety

APPENDIX A

Regulatory Requirements

REGULATORY REQUIREMENTS

In Ontario, there is a total of eleven Designated Substances. These substances have been regulated under Ontario Regulation 490/09 — *Designated Substances*, made under the Ontario Health and Safety Act, which applies to controlling designated substances in the workplace.

In addition to the Ontario Regulation 490/09 noted above, the following were observed for this survey:

Guideline: Lead on Construction Projects, issued April 2011 by the Occupational Health and Safety branch of the Ministry of Labour

Guideline: Silica on Construction Projects issued in April 2011 by the Occupational Health and Safety branch of the Ministry of Labour.

The Occupational Health and Safety Act (OHSA), R.S.O. 1990, c.0.1, s.30 (1) specifies that: “Before beginning a project, the owner shall determine whether any Designated Substances are present at the project site and shall prepare a list of all Designated Substances that are present at the site.

Section 30 of The Act requires that the list of Designated Substances be provided to prospective contractors and subcontractors who may do work on a site and come into contact at the site with Designated Substances.

The Ministry of Labour has designated the following substances:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

Ontario Regulation 278/05 (O. Reg. 278/05), the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, made under the Occupational Health and Safety Act (OHSA), requires owners of a building to identify asbestos-containing materials (ACMs) prior to potential disturbance of the materials.

In addition, an owner of a building is required to have an Asbestos Management Plan if ACMs (friable or non-friable) are present in the building and are to remain in place. An inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities. Removal of all ACMs is required prior to building demolition.

In addition to the Designated Substances, the building was also surveyed for the presence of other hazardous materials such as polychlorinated biphenyls (PCBs), radioactive materials, ozone-depleting-substances (ODSs), other halocarbons, and mould.

We understand that this survey has been conducted to comply with the regulatory requirements of Ontario Regulation 278/05.

APPENDIX B

Survey Methodology & Background Information

SURVEY METHODOLOGY

For the purpose of this survey, not all Designated Substances or suspect hazardous materials were sampled. Selective sampling was carried out only for substances that were suspected to be present or those deemed to have a likely source of origin in the survey areas.

Materials that were homogeneous in nature and/or similar in appearance to other materials tested were considered to be of similar composition. The likelihood of ACMs being present in inaccessible areas, such as above gypsum board ceilings or behind gypsum wallboards, was determined by assessing the presence of asbestos-containing systems in adjacent areas. Equipment such as boilers, motors, blowers, electrical panels, fire doors, etc., must be de-energized or disassembled to examine internal components or materials. These items should be considered to contain hazardous materials until proven otherwise.

During the survey, representative samples of suspect building materials were collected and sent to CALA accredited independent laboratory for analysis. The Laboratory Certificate of Analysis is attached in Appendix C.

Other potential hazardous materials were identified by visual observation and/or by reviewing Material Safety Data Sheets (MSDS) and/or safety labels where available.

Investigated Areas

The survey included all accessible areas and ceiling space within 548 King Edward Avenue, as required under our scope of work. No destructive investigations were performed as part of this survey. Photographs of the areas investigated can be found in Appendix D.

The assessment was directed at the interior structure and finishes of the building. It did not consider current or past owner or occupant articles throughout the building (i.e. contents, furniture, etc.) and did not report on possible contaminants in the soil under and surrounding the building or contents of vessels, drums, etc., that may be concealed.

Sampling and Assessment Methodologies

Sampling was conducted as part of this assessment. Results for asbestos and lead samples can be found in the Findings & Recommendation Section 3.0.

A historical review of previous designated substance survey reports and abatement reports were examined as part of this survey. The reports are listed as follows,

- Designated Substance Report by CM3 Environmental (dated October 2017, reference # TLW 1561);

Asbestos

Background Information on Asbestos

Asbestos is a generic name for a group of naturally occurring fibrous minerals. In the past, asbestos was commonly used in building materials such as insulation, fireproofing and acoustic.

or decorative panels. Although there are many types of asbestos, Ontario's three primary forms of commercial importance are chrysotile, amosite and crocidolite.

An ACM is defined by O. Reg. 278/05 as a material that contains 0.5% or more asbestos by dry weight. ACMs are placed into two general classes, “friable” and “non-friable” ACMs. Friable ACMs are dry materials that can be crumbled, pulverized and reduced to powder by hand pressure. Typical friable ACMs include acoustical or decorative texture coats, fireproofing and thermal insulation. Non-friable ACMs are much more durable as they are held together by a binder such as cement, vinyl or asphalt. Typical non-friable ACMs include floor tiles, fire blankets, roofing materials and cementitious products such as wallboards, pipes or siding.

It has been recognized that hazardous situations may exist in buildings where ACMs are found. This is especially true where asbestos fibres may become airborne due to material ageing, physical damage, water damage or air movement.

In contrast, there is little reason for concern if the asbestos is in good condition, has not been damaged and is not in a location where it is likely to be disturbed.

Asbestos Survey Methodology

The asbestos survey included identifying potential friable and non-friable asbestos-containing materials throughout the surveyed areas of the subject building.

The likelihood of ACMs being present in inaccessible areas, such as above gypsum wallboard ceilings and walls, was determined by assessing the presence of asbestos-containing materials in adjacent areas.

Fiberglass insulation was not submitted for analysis as it can be identified visually as non-asbestos material. Building materials suspected of containing asbestos were identified, and representative sampling and laboratory testing of these materials was conducted. The number of bulk material samples collected from a homogeneous area was under Table 1. O. Reg. 278/05 s. 3 (3) below. Building materials suspected of containing asbestos were collected using wetting techniques and hand-sampling tools.

Table 1 - O. Reg. 278/05 s. 3(3): Minimum Asbestos Bulk Material Sample Requirements

Item	Type of material	Size of the area of homogeneous material	Minimum number of bulk material samples to be collected
1.	Surfacing material, including, without limitation, material that is applied to surfaces by spraying, troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in item 3	any size	3

3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	<u>Other material</u>	<u>Any size</u>	3

Preliminary identification of the samples was made using polarized light microscopy (PLM), confirming the presence and type of asbestos caused by dispersion staining optical microscopy. This analytical procedure follows the U.S. Environmental Protection Agency Test Method EPA/600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials, June 1993.

EMSL Canada Inc. (EMSL), an independent laboratory, analyzed all bulk samples for asbestos content. EMSL is an independent laboratory accredited by the National Institute of Standards and Technology/National Voluntary Laboratory Accreditation (NIST/NVLAP) (Lab Code #200877-0).

Vinyl floor tiles were analyzed using the phase light microscopy (PLM) analysis method. However, given the composition of vinyl floor products, the PLM analysis method may be prone to yield false negative analytical results. Therefore, before removal or replacement, vinyl floor products previously identified as negative should undergo additional analysis by Transmission Electron Microscopy (TEM) to confirm asbestos content, if any.

Materials identified to contain asbestos were assessed on the relative possibility of fibre release into the air due to their condition and accessibility.

Evaluation of ACMs Based on Condition

In evaluating an ACM's condition, the following criteria were applied:

- **Good** – Material shows no signs of damage and/or is encapsulated. ACM could remain in place until eventual building demolition or major renovation.
- **Fair** – Material shows signs of minor damage (<5% damage) or near the end of useful life. This includes minor shrinking, cracking, delamination and/ or other damage. The material should be monitored closely and scheduled to be repaired, encapsulated or removed.
- **Poor** – Damage is greater than 5% to any ACM material and is highly recommended to be removed, repaired or encapsulated.

Note: The above evaluation criteria were also applied to other hazardous materials. Please refer to the Asbestos and Hazardous Materials Checklist in Appendix E & F for further details.

Lead

Background Information on Lead

Lead was a common additive in exterior and hard-wearing paint applications. Lead was used to prolong the paint's shelf life and increase its flexibility and durability to wear and weather. Acute exposure to lead by inhalation or ingestion may cause headaches, fatigue, nausea, abdominal cramps and joint pain. Chronic exposures can cause reduced hemoglobin production and reduced lifespan. It has also been known to impact

the body's central and peripheral nervous systems and brain function and has been linked to learning disabilities in children.

No regulatory limit in Ontario determines what lead concentration constitutes a "lead-containing material." On October 21, 2010, Health Canada, under the *Hazardous Products Act*, stated that the lead content in surface-coating materials, furniture, toys and other articles for children should not exceed 90 mg/kg (0.009%, 90 ppm). However, this is intended for importing or selling products within Canada. Therefore, this is not to be misconstrued as a limit established to define a lead-containing material or a limitation with respect to lead on construction projects.

The Environmental Abatement Council of Canada (EACC) has also developed the "*Lead Guideline for Construction, Renovation, Maintenance or Repair*" dated October 2014, which discusses the classification, handling, disturbance and removal of lead-containing materials. For this guideline, paints or surface coatings containing less than or equal to 0.1% lead by weight (1000 mg/kg or 1000 ppm) are considered low-level lead paints or surface coatings. If these materials (and their respective surfaces) are disturbed in a non-aggressive manner and performed using adequate dust control procedures, then worker protection from the inhalation of lead is not required.

Furthermore, paints or surface coatings containing greater than 0.1% lead by weight are considered lead-containing paints or surface coatings. If these materials (and their respective surfaces) are disturbed, appropriate lead abatement procedures must always be followed.

Exposure to lead-containing materials is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act. Care must be taken to prevent lead-containing particles from becoming airborne during the disturbance of lead-containing surfaces (i.e., during renovation or demolition projects). All lead abatement work must follow procedures outlined in the Guideline Lead on Construction Projects, issued in September 2004 (amended in April 2011) by the Occupational Health and Safety branch of the Ministry of Labour (Type 1-3). Similarly, the lead abatement work procedures outlined in the EACC Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014) may also be implemented (Class 1-3).

Lead has been used in solder on copper plumbing fixtures, lead conduit pipes, lead-calcium battery plates, ammunition, and nuclear and X-ray shielding devices. However, these materials were not sampled during this investigation but were noted where applicable.

Representative bulk samples of paint and finishes suspected of containing lead were collected to verify lead content in paints. Bulk samples were scraped down to the building base structure, with all possible layers present, placed in sealed plastic bags and labelled, and then submitted to an independent laboratory for analysis. Samples were treated with a dilute nitric acid sample digestion prior to filtration. The analysis utilized for lead detection in filtered samples was inductively coupled plasma optical emission spectrometry (ICP-OES).

Mercury

Background Information on Mercury

Mercury is known to cause human poisoning through inhaling vapours, ingesting contaminated materials or skin absorption through direct contact with the liquid.

Precautions must be taken to prevent mercury vapours from becoming airborne during renovations or building demolition. Exposure to airborne mercury is regulated under the Revised O. Reg. 490/09 as amended – Regulation respecting Mercury – made under the Occupational Health and Safety Act; and under O. Reg. 558, which amended O. Reg. 347/90 (General - Waste Management), mercury is classified as a Schedule 2(b) Hazardous Waste Chemical. Its hazardous waste number is U151.

Mercury is found in thermostats, temperature and pressure gauges, fluorescent lamps and batteries. Mercury in products can be released to the environment through breakage or disposal at the end of a useful life. Improper disposal of these mercury products poses a health and environmental risk to everyone. In addition, the removal of mercury-containing products can create wastes that are often classified as hazardous. Wastes that leach mercury in concentrations exceeding Ontario Regulation 347/90 (General - Waste Management) limits are also considered hazardous.

The mercury in thermostats switch contains approximately 3-4 grams in a glass ampoule, typically attached to a metal coil. Mercury-containing switches have been used in thermostats for over 40 years.

Mercury is an essential component in fluorescent lamps and HID lamps. The mercury is in a vapour form, and the phosphor coating is on the lamp tube. Estimates of the mercury content contained in compact, 4-foot, and 8-foot lamps are 10 mg, 23 mg, and 46 mg, respectively.

Most fluorescent lamps qualify as hazardous waste when removed from service and are prohibited from disposal in the solid waste stream. Fluorescent lamps would be classified as 146T on your facility Generator Registration Report under O. Reg. 347/90 - General Waste Management, as amended by O. Reg. 558/00. Under this regulation, if the leachate results exceed 0.1 milligrams of mercury per litre for a given waste, the facility must treat the waste as hazardous. Most fluorescent and HID lamps will exceed the leachate toxicity limit; therefore, these wastes must be registered and treated as hazardous waste or sent for recycling.

Silica

Background Information on Silica



Silica is expected to be present in building materials such as concrete, brick, mortar and ceramic tiles throughout the structures. Free crystalline silica (α -Quartz) may be a component in ceiling tiles and gypsum boards. Silica (including free crystalline silica) may also be a component of concrete and brick surfaces noted in the building.

Exposure to airborne silica is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act.

Polychlorinated Biphenyls (PCBs)

Background Information on PCBs

Polychlorinated Biphenyls (PCBs) were commonly used as a dielectric insulating fluid in electrical equipment such as transformers, capacitors, and fluorescent and HID lamp ballasts. The production of PCBs in North America started in 1929 and was banned at the beginning of 1979. After 1981, no manufacturers produced fluorescent and HID lamps with PCB-containing ballasts.

PCBs are not designated substances under the Occupational Health and Safety Act.

PCB Regulations (SOR/2008-273)

The *PCB Regulations* (the Regulations) set specific deadlines for ending the use of PCBs in concentrations at or above 50 mg/kg, eliminating all PCBs and equipment containing PCBs currently in storage and limiting the time PCBs can be stored before being destroyed. The Regulations also establish sound practices for the better management of the remaining PCBs in use (i.e. those with a content of less than 50 mg/kg) until their eventual elimination to prevent contamination of dielectric fluids and dispersion of PCBs in small quantities into other liquids.

Ozone Depleting-Substances (ODSs) and Other Halocarbons

Background Information on ODSs

Within Ontario, the general use of ozone-depleting substances (ODSs) and other halocarbons is controlled through Regulation 463/10 of the Environmental Protection Act. The production of ODSs in hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) ceased in Canada in 1993 due to their ozone-depleting characteristics. The importation of CFCs into Canada ceased in 1997, and a total ban was placed on their use in 2010. The use of these materials is still permitted in existing equipment, but equipment must be serviced by a licensed contractor such that CFCs are contained and not released to the environment during servicing or operation.

Radioactive Materials

Two types of smoke detectors are common in buildings (residential, institutional, commercial, industrial, etc). Photoelectric-type smoke detectors detect smoke using an optical sensor, whereas ionization-type smoke detectors use an ionization chamber containing radioactive material. The ionization type is cheaper and is particularly common in older buildings. A typical modern detector contains about 1.0 microcurie of the radioactive element americium, a decrease from 3 microcurie in 1978. Sealed radioactive material sources in fire detection systems are still permitted and regulated by the Canadian Nuclear Safety Commission and the Canadian Nuclear Safety Act. The radioactive sources in smoke alarms are sealed and contained within a metal case inside the smoke detector and must not be damaged or tampered with.

Mould & Water Damage

Mould growth inside buildings is due to excess moisture caused by leakages, condensation or capillary movement of water into the building. Toxic moulds such as *Stachybotrys chartarum* and some species of *Aspergillus* spp. are greenish-black, wet and slimy moulds that grow on soaking, wet cellulose-based materials. They are often found near water leaks or where drying is very slow and can form after flooding if insufficient cleanup and drying occur. They will generally not occur if materials are kept dry.

MPL conducted a general visual assessment for any apparent signs of visible mould and/or water damage. Based on our visual observations, the following guidelines were used in providing our recommendations for remedial action where required:

- Institute of Inspection Cleaning and Restoration Certification (IICRC) S520 Standard and Reference for Professional Mould Remediation,
- The Canadian Construction Association (CCA) Mould Guidelines for the Canadian construction industry (CCA document 82-2004)
- Environmental Abatement Council of Canada (EACC) Mould Abatement Guidelines.

Other Designated Substances

Select Designated Substances (acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, benzene, or vinyl chloride) are not expected to be present in the building in the matrix or sufficient quantities to cause an exceedance of Ministry of Labour exposure guidelines. As such, no sampling was conducted for these materials.

Vinyl Chloride

Vinyl chloride (monomer) is likely to be stable within poly vinyl-chloride (PVC) piping and conduits and as a component of interior finishes. Such building materials are not considered hazardous in their current matrix/composition.

Acrylonitrile

Acrylonitrile or ACN (vinyl cyanide) is an explosive, flammable liquid used to manufacture acrylic fibres, rubber-like materials and pesticide fumigants. Acrylonitrile was not noted and would not be expected to be present in the project-specific area/surveyed area/subject building.

Arsenic

Arsenic is used in metallurgy for hardening copper, lead and alloys, in pigment production, in the manufacture of certain types of glass, in insecticides, fungicides and rodenticides, as a by-product in the smelting of copper ores, and as a dopant material in semiconductor manufacturing. Arsenic or arsenic compounds were not noted nor expected to be present in the project-specific area/surveyed area/subject building.

Benzene

Benzene or benzol is a colourless liquid. It is used as an intermediate in producing styrene, phenol, cyclohexane, and other organic chemicals and in manufacturing detergents, pesticides, solvents, and paint removers. It is also found in gasoline. Benzene may be stable in roofing materials, paints and adhesives throughout the subject building. Such building materials are not considered hazardous in their current matrix/composition.

Coke Oven Emissions

Coke oven emission is a benzene-soluble fraction of the total particulate matter of the substances emitted into the atmosphere from metallurgical coke ovens.

Ethylene Oxides

Ethylene oxide is a colourless gas liquefying below 12°C. It is generally used as a fumigant and sterilizing agent for medical equipment. It is generally used as a fumigant and sterilizing agent for medical equipment.

Isocyanates

Isocyanate compounds may be present to stabilize paint finishes, varnishes, polyurethane plastics, synthetic rubbers, foams and adhesives. Such building materials are not considered hazardous in their current matrix/composition.

To reduce the potential for exposure to workers or occupants, any suspect hazardous building material(s) not detailed within this survey due to inaccessibility and/or discovered during renovation/demolition activities must be appropriately assessed and/or tested prior to their disturbance.

APPENDIX C

Laboratory Analytical Reports



EMSL Canada Inc.

22 Antares Drive Suite 102 Ottawa, ON K2E 7Z6
 Phone/Fax: (343) 882-6076 / (343) 882-6077
<http://www.EMSL.com> / ottawalab@EMSL.com

EMSL Canada Order 672001613
 Customer ID: 55CTCS25B
 Customer PO: 0Z2-021101
 Project ID: Ottawa DSS

Attn: Stefan Holik Phone: (613) 836-2184
 McIntosh Perry Consulting Engineers Ltd Fax:
 115 Walgreen Rd RR 3 Collected: 9/ 8/2020
 Carp, ON K0A 1L0 Received: 9/14/2020
 Analyzed: 9/21/2020

Proj: University of Ottawa 0Z2-021101 (548 King Edward) (Ottawa DSS)

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

Client Sample ID: 1.1-Skim Coat **Lab Sample ID:** 672001613-0001
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 1.1-Base Coat **Lab Sample ID:** 672001613-0001A
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	

Client Sample ID: 1.2 **Lab Sample ID:** 672001613-0002
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	7.0%	93.0%	None Detected	

Client Sample ID: 1.3-Skim Coat **Lab Sample ID:** 672001613-0003
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 1.3-Base Coat **Lab Sample ID:** 672001613-0003A
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	

Client Sample ID: 1.4-Skim Coat **Lab Sample ID:** 672001613-0004
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 1.4-Base Coat **Lab Sample ID:** 672001613-0004A
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	



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Customer ID: 55CTCS25B
Customer PO: 0Z2-021101
Project ID: Ottawa DSS

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

Client Sample ID: 1.5 **Lab Sample ID:** 672001613-0005
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	

Client Sample ID: 1.6-Skim Coat **Lab Sample ID:** 672001613-0006
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 1.6-Base Coat **Lab Sample ID:** 672001613-0006A
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	

Client Sample ID: 1.7-Skim Coat **Lab Sample ID:** 672001613-0007
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 1.7-Base Coat **Lab Sample ID:** 672001613-0007A
Sample Description: 548 King Edward/Plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	1.0%	99.0%	None Detected	

Client Sample ID: 2.1 **Lab Sample ID:** 672001613-0008
Sample Description: 548 King Edward/Mortar - Grey brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.2 **Lab Sample ID:** 672001613-0009
Sample Description: 548 King Edward/Mortar - Grey brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.3 **Lab Sample ID:** 672001613-0010
Sample Description: 548 King Edward/Mortar - Grey brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	0.0%	100.0%	None Detected	



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EMSL Canada Order 672001613
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101
Project ID: Ottawa DSS

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

Client Sample ID: 3.1 **Lab Sample ID:** 672001613-0011
Sample Description: 548 King Edward/Mortar - Red brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Red	0.0%	100.0%	None Detected	

Client Sample ID: 3.2 **Lab Sample ID:** 672001613-0012
Sample Description: 548 King Edward/Mortar - Red brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Red	0.0%	100.0%	None Detected	

Client Sample ID: 3.3 **Lab Sample ID:** 672001613-0013
Sample Description: 548 King Edward/Mortar - Red brick - Basement

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4.1 **Lab Sample ID:** 672001613-0014
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.2 **Lab Sample ID:** 672001613-0015
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.3 **Lab Sample ID:** 672001613-0016
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.4 **Lab Sample ID:** 672001613-0017
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.5 **Lab Sample ID:** 672001613-0018
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	



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EMSL Canada Order 672001613
 Customer ID: 55CTCS25B
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 Project ID: Ottawa DSS

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

Client Sample ID: 4.6 **Lab Sample ID:** 672001613-0019
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.7-Joint Compound 1 **Lab Sample ID:** 672001613-0020
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.7-Joint Compound 2 **Lab Sample ID:** 672001613-0020A
Sample Description: 548 King Edward/DJC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Tan	0.0%	98.0%	2% Chrysotile	

Client Sample ID: 5.1-Vinyl Floor Tile **Lab Sample ID:** 672001613-0021
Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	10.0%	90.0%	None Detected	

Client Sample ID: 5.1-Mastic **Lab Sample ID:** 672001613-0021A
Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5.2-Vinyl Floor Tile **Lab Sample ID:** 672001613-0022
Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	10.0%	90.0%	None Detected	

Client Sample ID: 5.2-Mastic **Lab Sample ID:** 672001613-0022A
Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5.3-Vinyl Floor Tile **Lab Sample ID:** 672001613-0023
Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Gray	10.0%	90.0%	None Detected	



EMSL Canada Inc.

22 Antares Drive Suite 102 Ottawa, ON K2E 7Z6
Phone/Fax: (343) 882-6076 / (343) 882-6077
<http://www.EMSL.com> / ottawalab@EMSL.com

EMSL Canada Order 672001613
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101
Project ID: Ottawa DSS

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

Client Sample ID: 5.3-Mastic **Lab Sample ID:** 672001613-0023A

Sample Description: 548 King Edward/VFT - Grey, white and black - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 6.1-Layer 1 **Lab Sample ID:** 672001613-0024

Sample Description: 548 King Edward/Grout - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Pink	3.0%	97.0%	None Detected	

Client Sample ID: 6.1-Layer 2 **Lab Sample ID:** 672001613-0024A

Sample Description: 548 King Edward/Grout - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Pink	4.0%	96.0%	None Detected	

Client Sample ID: 6.2-Layer 1 **Lab Sample ID:** 672001613-0025

Sample Description: 548 King Edward/Grout - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Pink	4.0%	96.0%	None Detected	

Client Sample ID: 6.2-Layer 2 **Lab Sample ID:** 672001613-0025A

Sample Description: 548 King Edward/Grout - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Pink	0.0%	100.0%	None Detected	

Client Sample ID: 6.3 **Lab Sample ID:** 672001613-0026

Sample Description: 548 King Edward/Grout - Kitchen

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/21/2020	Pink	4.0%	96.0%	None Detected	



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EMSL Canada Order 672001613
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101
Project ID: Ottawa DSS

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

Analyst(s):

Ewa Krupinska PLM (25)
Simon Parent PLM (12)

Reviewed and approved by:

Simon Parent, Laboratory Manager
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency or the U.S. Government

Samples analyzed by EMSL Canada Inc. Ottawa, ON

Initial report from: 09/21/2020 16:56:24

**EMSL Canada Inc.**

2756 Slough Street, Mississauga, ON L4T 1G3

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EMSL Canada Or	552011566
CustomerID:	55CTCS25B
CustomerPO:	0Z2-021102
ProjectID:	Ottawa DSS

Attn: **Stefan Holik**
McIntosh Perry Consulting Engineers Ltd
115 Walgreen Rd RR 3
Carp, ON K0A 1L0

Phone: (613) 836-2184
 Fax:
 Received: 9/15/2020 10:10 AM
 Collected:

Project: **University of Ottawa 0Z2-021102 "Ottawa DSS - 548 King Edward****Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)***

<i>Client SampleDescription</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
PB 1 552011566-0001		9/18/2020	0.2529 g	0.0080 % wt	<0.0080 % wt
	Site: 548 King Edward - grey floor - basement				
PB 2 552011566-0002		9/18/2020	0.2507 g	0.0080 % wt	<0.0080 % wt
	Site: 548 King Edward - red stairs- basement				
PB 3 552011566-0003		9/18/2020	0.2430 g	0.0082 % wt	<0.0082 % wt
	Site: 548 King Edward - white walls - first floor hallway				
PB 4 552011566-0004		9/18/2020	0.2515 g	0.040 % wt	1.4 % wt
	Site: 548 King Edward - grey stairs - first floor				
PB 5 552011566-0005		9/18/2020	0.2416 g	0.0083 % wt	<0.0083 % wt
	Site: 548 King Edward -brown wall -first floor - front bedroom				

Rowena Fanto, Lead Supervisor
 or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
 Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
 Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Initial report from 09/22/2020 09:17:36

APPENDIX D
Site Photographs



Photo 1: View of asbestos-containing drywall joint observed to be damaged on the ceiling on the 1st floor of the subject building.



Photo 2: View of asbestos-containing drywall joint compound observed to be damaged in the hallway of the 2nd floor.



Photo 3: View of asbestos-containing drywall joint compound observed to be damaged on the ceiling on the 1st floor of the subject building.



Photo 4: View of white lead based paint observed at 546 King Edward Ave.

APPENDIX E

Asbestos-Containing Materials Checklists

Floor/Level	Room	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action	Estimated Abatement Cost	Comments
0	Throughout Subject Floor	Drywall Joint Compound	Walls and Ceiling	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
0	Basement	Air-Cell Mechanical Insulation	Pipes	Confirmed	Friable	Poor Condition	Easy	Low	12	LF	Remove Following Type 2 (Glovebag) Abatement Procedures	\$1,200.00	
0	Basement	Pipe Elbows/fittings	Pipes	Confirmed	Friable	Poor Condition	Easy	Low	6	C	Remove Following Type 2 (Glovebag) Abatement Procedures	\$1,200.00	
1	Throughout Subject Floor	Drywall Joint Compound	Walls and Ceiling	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
1	Room 100A	Drywall Joint Compound	Wall	Confirmed	-	Poor Condition	Easy	Low	4	SF	Repair or Remove Following Type 1 Abatement Procedures	\$600.00	
1	Room 104	Drywall Joint Compound	Ceiling	Confirmed	-	Poor Condition	Easy	Low	2	SF	Repair or Remove Following Type 1 Abatement Procedures	\$600.00	
2	Throughout Subject Floor	Drywall Joint Compound	Walls and Ceiling	Confirmed	-	Good Condition	Easy	Low	-	-	Manage in Place		
2	Room 200	Drywall Joint Compound	Wall	Confirmed	-	Poor Condition	Easy	Low	2	SF	Repair or Remove Following Type 1 Abatement Procedures	\$600.00	
2	Back Bedroom	Drywall Joint Compound	Ceiling	Confirmed	-	Poor Condition	Easy	Low	2	SF	Repair or Remove Following Type 1 Abatement Procedures	\$600.00	
2	Bedrooms	Drywall Joint Compound	Walls and Ceiling	Confirmed	-	Fair Condition	Easy	Low	50	LF	Monitor Condition of Material. Consider Removal or Repair.		Cracks in walls and ceiling
All	Throughout Subject Building	Parquet Flooring	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		

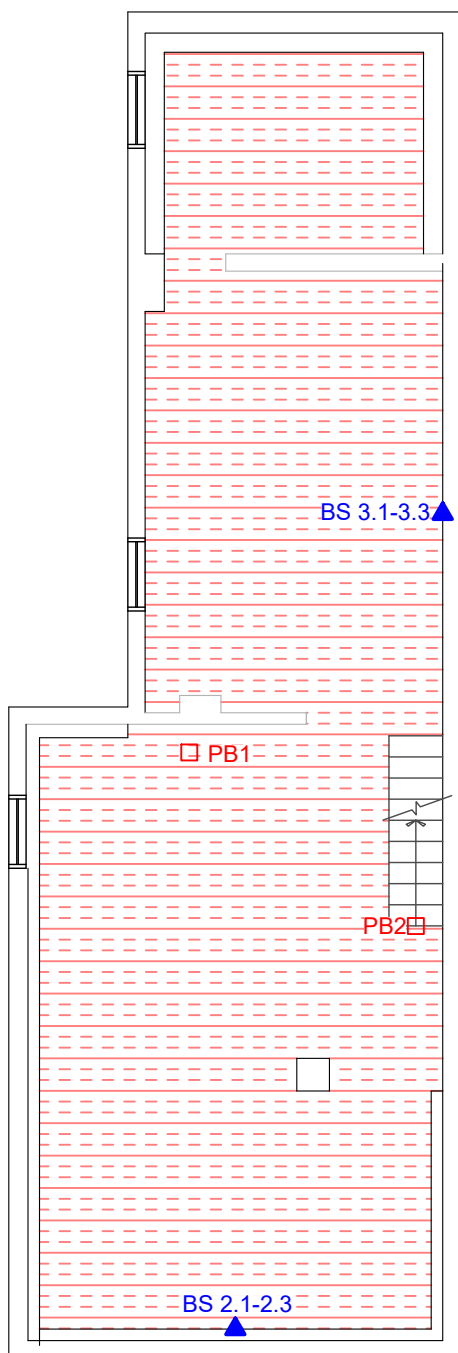
APPENDIX F

Hazardous Containing Materials Checklists

Floor/Level	Location	DS Type	Component	Colour	Condition	Manufacturer	Quantity #	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatement Cost	Comments
1	Kitchen	Water Damage	Pipes	N/A	Poor Condition	N/A	-	-	Confirmed	Should be replaced as part of regular maintenance.		Water Damage on Pipes in Panty
1	Room 100A	Lead	Stair Paint	White	Good Condition	N/A	-	-	Confirmed	Manage in Place		
1	Exterior	Lead	Door Frame Paint	Brown	Good Condition	N/A	-	-	Confirmed	Manage in Place		
1	Room 100A	Lead	Door, Doorframe and Stairs Paint	Dark Red	Good Condition	N/A	-	-	Confirmed	Manage in Place		
1	Room 101	Lead	Doorframes, Trim and Radiator Paint	Yellow	Good Condition	N/A	-	-	Confirmed	Manage in Place		
1	Room 102	Lead	Doorframe and Trim Paint	White	Good Condition	N/A	-	-	Confirmed	Manage in Place		
2	Room 206	Lead	Window Frame, Door, Trim and Radiator Paint	Green	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Polychlorinated Biphenyls (PCBs)	Light Ballast	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Mercury	Fluorescent Light Tubes	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Mercury	Thermostat	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Radioactive Material	Smoke Detector	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout Subject Building	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		

APPENDIX G

Site Sampling & Location Plans



McINTOSH PERRY
 6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3
 Tel: 905.856.5200 Fax: 905.695.0221
 Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

- ▲ Asbestos Bulk Sample
- Lead Paint Sample <LOD
- Lead Paint Sample >LOD

ACM Mechanical Insulation

NOTES: Drywall with ACM joint compound is present throughout the building.

THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS, REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANTS, PRIOR TO PROCEEDING WITH ANY WORKS.

CLIENT: UNIVERSITY OF OTTAWA

TITLE: SAMPLE LOCATIONS BASEMENT

PROJECT: 548 KING EDWARD DESIGNATED SUBSTANCE SURVEY

SCALE: 1:100

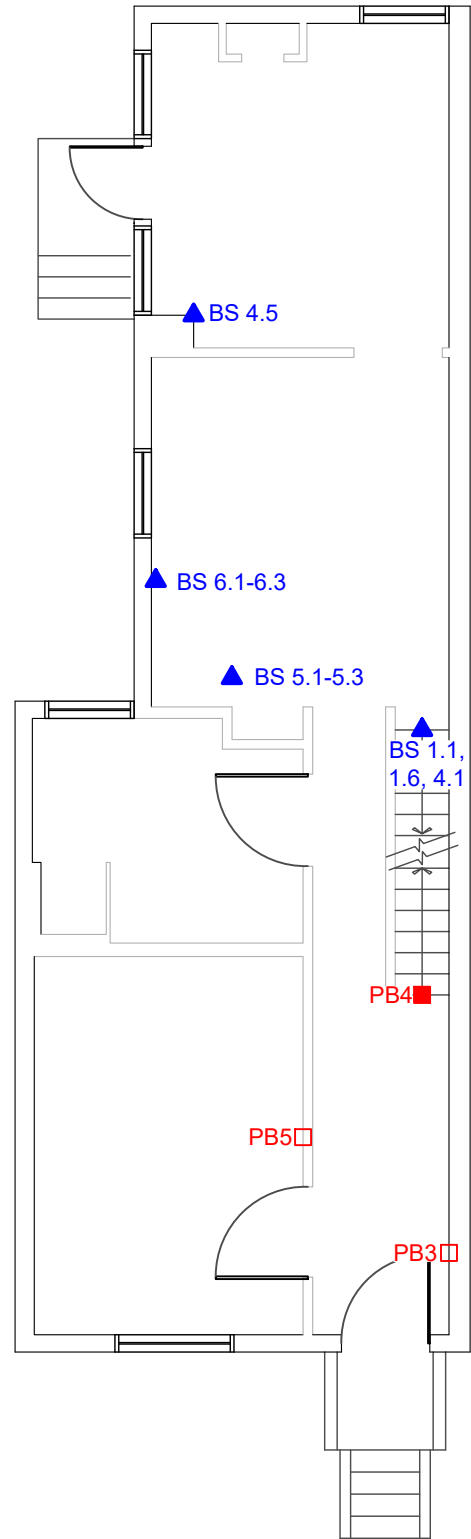
DATE: JANUARY 19, 2021

DRAWN: K.B.

CHECKED: J.T.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A0



McINTOSH PERRY
 6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3
 Tel: 905.856.5200 Fax: 905.695.0221
 Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

- ▲ Asbestos Bulk Sample
- Lead Paint Sample <LOD
- Lead Paint Sample >LOD

NOTES: Drywall with ACM joint compound is present throughout the building.

THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS, REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANTS, PRIOR TO PROCEEDING WITH ANY WORKS.

CLIENT: UNIVERSITY OF OTTAWA

TITLE: SAMPLE LOCATIONS
GROUND FLOOR

PROJECT: 548 KING EDWARD
DESIGNATED SUBSTANCE SURVEY

SCALE: 1:100

DATE: JANUARY 19, 2021

DRAWN: K.B.

CHECKED: J.T.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: AI

REV.:

