HAZARDOUS MATERIALS SURVEY AND 2023 REASSESSMENT
538-540 KING EDWARD AVENUE, OTTAWA, ON

Project No.: Z2021101HZ / CCC-230252-00

Prepared for:

University of Ottawa

Prepared by:

McIntosh Perry Limited (MPL)

MPL Contact:

John Tufts, Project Manager

Hazardous Materials / Environmental Health & Safety

T: 613-836-2184 E: j.tufts@mcintoshperry.com

Date:

March 11, 2024

McINTOSH PERRY

TABLE OF CONTENTS

REASSESSMENT SURVEY 2023

McIntosh Perry Limited **(MPL)** was retained by the University of Ottawa to complete a Hazardous Materials Survey for the building located at 538-540 King Edward Avenue in Ottawa, Ontario. MPL was also retained to reassess the condition of hazardous building materials found. The original survey was conducted on March 3rd, 2020. The reassessment was completed on **September 15th, 2023**.

The purpose of the reassessment was to evaluate the condition and quantity of previously reported asbestos-containing materials (ACM) and develop corrective action plans as required for long-term management.

The assessment and reassessment determined the following findings and recommendations.

Summary of the Reassessment Findings:

- ACM Drywall Joint Compound was observed to be in Good Condition throughout the subject building.
- Wall and Ceiling Plaster were observed to be in Good Condition throughout the subject building.
- No Mould or Water damage were observed during the site survey.

Summary of Recommendations:

- Perform a reassessment of asbestos materials on an annual basis.
- Sample any presumed ACM prior to alteration or maintained work if presumed ACM may be disturbed by the work.
- Perform a pre-construction assessment and remove all asbestos-containing materials (ACM) prior to alterations or maintenance work if ACM may be disturbed by the work.
- Follow appropriate safe work procedures when handling or disturbing asbestos.

EXECUTIVE SUMMARY

McIntosh Perry Limited **(MPL)** was retained by the University of Ottawa to complete a Hazardous Materials Survey for the building located at 538-540 King Edward Avenue in Ottawa, Ontario. The survey was conducted on March 3rd, 2020. **The Reassessment Survey was conducted on September 15th, 2023.**

The purpose of the survey was to determine the presence of building materials containing Designated Substances, as defined under the Ontario Occupational Health and Safety Act. Designated Substances are eleven chemical agents prescribed under Ontario Regulation 490/09.

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

Table A: Summary of Asbestos-Containing Materials Identified

Material Description	Location	Type of Asbestos	Friable?
Drywall Joint Compound	Throughout Building	Chrysotile	-
Plaster	Throughout Building	Chrysotile	Yes
Vermiculite in Plaster	Throughout Building	Suspect	Yes
Brick Mortar	Throughout Building	Suspect	-
Concrete Block Mortar	Throughout Building	Suspect	-
Fire Doors	Throughout Building	Suspect	-
Roofing Materials	Roof	Suspect	-

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 every 12 months 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 previously 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
Lead Acid Batteries	Specific Equipment
Mercury Vapour	Specific Equipment
Silica	Throughout Building
Radioactive Materials	Specific Equipment
Ozone Depleting Substances	Specific Equipment

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

Designated Substances area 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 within 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.

McINTOSH PERRY

March 11, 2024

University of Ottawa
141 Louis-Pasteur Private
Ottawa, Ontario
K1N 1E3

via email: martine.bergeron@uottawa.ca

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

Re: 538-540 King Edward Avenue in Ottawa, Ontario
Hazardous Materials Survey and 2023 Reassessment
McIntosh Perry Limited Reference No. Z2021101HZ / CCC-230252-00

1.0 INTRODUCTION

Under your instructions, McIntosh Perry Limited (MPL) conducted a Hazardous Materials Survey at the academic building at 538-540 King Edward Avenue in Ottawa, Ontario. The site is situated on the west side of King Edward Avenue, south of Laurier Avenue East. The survey of the building was conducted on March 6th, 2020. **The Reassessment Survey was conducted on September 15th, 2023.**

The purpose of the survey was to determine the presence of building materials containing Designated Substances, 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;
- 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 academic building with a finished attic and a basement. The subject building was constructed in 1920 and covers approximately 7,061 square feet. The subject building was observed to be of wooden beam construction with a stone and concrete foundation. The interior walls were gypsum wallboard and concrete block. Throughout the subject building, ceilings were observed to be either ceiling tiles, gypsum wallboard or plaster. The floors were generally covered with carpet, vinyl floor tiles, vinyl sheet flooring or hardwood flooring.

3.0 FINDINGS & RECOMMENDATIONS

Designated Substances

3.1 Asbestos

Findings

Forty-four (44) bulk samples were previously collected during the hazardous materials 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 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	003	CT (1'x1'- Scattered Pinholes)	None Detected	N/A
BS 1.2	003	CT (1'x1'- Scattered Pinholes)	None Detected	N/A
BS 1.3	001	CT (1'x1'- Scattered Pinholes)	None Detected	N/A
BS 2.1	012	VFT (12"x12"-Grey w/ Grey & White)	None Detected	N/A
BS 2.2	012	VFT (12"x12"-Grey w/ Grey & White)	None Detected	N/A
BS 2.3	012	VFT (12"x12"-Grey w/ Grey & White)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 3.1	010B	VFT (12"x12"-Orange w/ Black Marks)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
		Leveler (Grey)	None Detected	N/A
		Compound (White)	None Detected	N/A
BS 3.2	010B	VFT (12"x12"-Orange w/ Black Marks)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
		Leveler (Grey)	None Detected	N/A

Sample ID	Location	Material	Type and Content	Friability
BS 3.3	Room 010B	VFT (12”x12”-Orange w/ Black Marks)	None Detected	N/A
		Mastic/Leveler (Grey/Black)	None Detected	N/A
BS 4.1	Room 005	Ceiling Texture Coat (White)	None Detected	N/A
		Ceiling Texture Coat (Grey)	None Detected	N/A
BS 4.2	Room 005	Ceiling Texture Coat (White)	None Detected	N/A
		Ceiling Texture Coat (Grey)	None Detected	N/A
BS 4.3	Room 005	Ceiling Texture Coat (White)	None Detected	N/A
		Ceiling Texture Coat (Grey)	None Detected	N/A
BS 5.1	Room 005	Plaster	None Detected	N/A
BS 5.2	Room 010B	Plaster (Skim Coat)	None Detected	N/A
		Plaster (Base Coat)	None Detected	N/A
BS 5.3	**Room 113**	**Plaster (Joint Compound 1)**	**2% Chrysotile**	**Friable**
		Plaster (Joint Compound 2)	**3% Chrysotile**	**Friable**
		Plaster (Drywall)	**None Detected**	**N/A**
BS 5.4	**Room 206**	**Plaster**	**Stop Positive - Not Analyzed**	**Friable**
BS 5.5	**Room 105**	**Plaster**	**Stop Positive - Not Analyzed**	**Friable**
BS 5.6	**Room 301A**	**Plaster**	**Stop Positive - Not Analyzed**	**Friable**
BS 5.7	**Room 302**	**Plaster**	**Stop Positive - Not Analyzed**	**Friable**
BS 6.1	Room 200	VSF (Black w/Lines)	None Detected	N/A
BS 6.2	Room 200	VSF (Black w/Lines)	None Detected	N/A
		Mastic (Beige)	None Detected	N/A
BS 6.3	Room 200	VSF (Black w/Lines)	None Detected	N/A
BS 7.1	Room 013	VFT (12”x12”- Brown w/ White & Grey)	None Detected	N/A
BS 7.2	Room 013	VFT (12”x12”- Brown w/ White & Grey)	None Detected	N/A
BS 7.3	Room 013	VFT (12”x12”- Brown w/ White & Grey)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 8.1	Room 001	CT (1’x1’- Linear w/ Pinholes)	None Detected	N/A
BS 8.2	Room 001	CT (1’x1’- Linear w/ Pinholes)	None Detected	N/A
		Joint Compound	None Detected	N/A
BS 8.3	Room 001	CT (1’x1’- Linear w/ Pinholes)	None Detected	N/A
BS 9.1	Room 113	VFT (12”x12”- Grey w/ White Markings)	None Detected	N/A
BS 9.2	Room 113	VFT (12”x12”- Grey w/ White Markings)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A

Sample ID	Location	Material	Type and Content	Friability
BS 9.3	Room 113	VFT (12”x12”- Grey w/ White Markings)	None Detected	N/A
BS 10.1	Room 112	VFT (12”x12”- Beige w/ Light & Dark Markings)	None Detected	N/A
BS 10.2	Room 112	VFT (12”x12”- Beige w/ Light & Dark Markings)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 10.3	Room 004	VFT (12”x12”- Beige w/ Light & Dark Markings)	None Detected	N/A
BS 11.1	**Room 012**	**Drywall Joint Compound**	**4% Chrysotile**	**-**
BS 11.2	**Room 001**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 11.3	**Room 304**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 11.4	**Room 305**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 11.5	**Room 206**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 11.6	**Room 010**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 11.7	**Room 101**	**Drywall Joint Compound**	**Stop Positive- Not Analyzed**	**-**
BS 12.1	Room 200	Texture Coat -Wall	None Detected	N/A
BS 12.2	Room 200	Texture Coat -Wall	None Detected	N/A
BS 12.3	Room 200	Texture Coat -Wall	None Detected	N/A

N/A – Not Applicable
CT – Suspended Ceiling Tile
VFT – Vinyl Floor Tiles
Stop Positive – Material considered to be asbestos-containing as 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

Fireproofing was not observed throughout the subject building.

3.1.2 Mechanical Pipe Insulation

3.1.2.1 Mechanical Pipe Straight Insulation

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

3.1.2.2 Mechanical Piping Elbows/Fittings Insulation

No mechanical pipe elbow/fitting insulation was observed throughout the subject building.

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 not 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 potential asbestos-containing heat shield insulation was observed throughout the subject building.

3.1.5 Texture Finishes

Texture coat was observed and previously sampled on the ceiling in Room 005 in the subject building. The laboratory analytical results of the samples collected from Room 005 indicate that this material does not contain asbestos.

Texture coat was observed and previously sampled on the wall in Room 200 of the subject building. The laboratory analytical results of the samples collected from Room 200 indicate that this material does not contain asbestos.

3.1.6 Plaster

Ceiling/wall plaster was observed and previously sampled throughout the subject building. Drywall joint compound was also noted to have been used over the top of plaster as a skim coat. The laboratory analytical results of the joint compound associated with the ceiling/wall plaster samples collected indicate that this material contains **2-3% Chrysotile asbestos**. Since plaster is a homogeneous material, all areas must be treated as asbestos-containing unless additional testing confirms otherwise. This material was observed to be in good condition.

It should be noted that vermiculite is present in plaster finishes in Room 005. Prior to any renovation or demolition, additional sampling should be completed to confirm the presence of asbestos in the vermiculite following TEM analysis and to delineate the locations of this material.

3.1.7 Drywall Joint Compound

Drywall joint compounds were observed and previously sampled throughout the subject building. The laboratory analytical results of drywall joint compound samples collected from various locations indicate that this material contains **4% Chrysotile asbestos**. Since drywall joint compound is a homogeneous material, all areas must be treated as asbestos-containing unless additional testing confirms otherwise. This material was observed to be in good condition.

3.1.8 Ceiling Tiles

Several different ceiling tiles were observed and previously sampled throughout the subject building as follows:

- Stick-on ceiling tiles (1'x1' – Scattered Pinholes) were observed and previously sampled in Rooms 001 and 003. The laboratory analytical results collected from Rooms 001 and 003 indicate that this material does not contain asbestos.

- Stick-on ceiling tiles (1'x1' – Linear w/ Pinholes) were observed and previously sampled in Room 001. The laboratory analytical results of the samples collected from Room 001 indicate that this material does not contain asbestos.

3.1.9 Vinyl Floor Tiles

Several different types of vinyl floor tiles were observed and previously sampled throughout the subject building as follows:

- Vinyl floor tiles (12"x12"- Grey with Grey & White) were observed and previously sampled in Room 012. The laboratory analytical results of the samples collected from Room 012 indicate that this material does not contain asbestos. The associated mastic (yellow) was also determined not to contain asbestos.

- Vinyl floor tiles (12"x12"- Orange w/ Black Marks) were observed and previously sampled in Room 010B. The laboratory analytical results of the samples collected from Room 010B indicate that this material does not contain asbestos. The associated mastic/leveller (black/grey) was also determined not to contain asbestos.

- Vinyl floor tiles (12"x12"- Brown w/ White and Grey) were observed and previously sampled in Room 013. The laboratory analytical results of the samples collected from Room 013 indicate that this material does not contain asbestos. The associated mastic (black) was also determined not to contain asbestos.

- Vinyl floor tiles (12"x12"- Grey w/ White Markings) were observed and previously sampled in Room 113. The laboratory analytical results of the samples collected from Room 113 indicate that this material does not contain asbestos. The associated mastic (yellow) was also determined not to contain asbestos.

- Vinyl floor tiles (12”x12”- Beige w/ Light and Dark Markings) were observed and previously sampled in Rooms 113 and 004. The laboratory analytical results of the samples collected from Rooms 113 and 004 indicate that this material does not contain asbestos. The associated mastic (black) was also determined not to contain asbestos.

3.1.10 Vinyl Sheet Flooring

Vinyl sheet flooring (Black w/ Lines) was observed and previously sampled in Room 200. The laboratory analytical results of the samples collected from Room 200 indicate that this material does not contain asbestos. The associated mastic (Beige) was also determined not to contain asbestos.

3.1.11 Brick Mortar

No bulk samples of the brick mortar were collected to avoid damage and compromising the structure’s integrity. Concrete brick mortar should be examined and tested for asbestos before renovating or demolishing. Concrete block mortar should, therefore, be considered to contain asbestos until bulk samples and analysis until proven otherwise.

3.1.12 Concrete Block Mortar

To avoid damage and compromising the structure’s integrity, no bulk samples of the concrete block mortar were collected. Prior to any renovation or demolition, concrete block mortar should be examined and tested for asbestos content. Concrete block mortar should, therefore, be considered to contain asbestos until bulk samples and analysis until proven otherwise.

3.1.13 Mastic

Carpet mastic (Yellow) was observed and previously sampled in Rooms 216 and 217. The Rooms 216 and 217 laboratory analytical results indicate that this material does not contain asbestos.

3.1.14 Transite (Asbestos Cement)

No transite materials were observed throughout the subject building.

3.1.15 Caulking

No caulking materials were observed throughout the subject building.

3.1.16 Cementitious Coating

No cementitious coating finishes were observed throughout the subject building.

3.1.17 Fire Doors

Fire doors were observed at various locations throughout the subject building. No bulk samples of the internal door insulation materials were collected to avoid possible damage. Prior to removal and/or replacement, fire doors should be examined and tested for asbestos content. Fire doors should be considered to contain asbestos until bulk samples and analysis confirm otherwise. All fire doors were observed to be in good condition.

3.1.18 Roofing Material

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

Recommendations

- Materials identified to contain asbestos that are in good condition and do not pose a risk to workers or occupants can be managed in place. Prior to any renovation or 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 any renovation or demolition of materials which are assumed to be asbestos-containing (suspect materials which were not sampled, i.e., roofing materials, concrete block mortar, brick mortar and fire doors), 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 every 12 months and as required based on expected changing site conditions, abatement and/or renovation activities.

3.2 Lead

Findings

3.2.1 Paint Finishes

A total of two (2) paint samples from the subject building were previously collected and analyzed for lead content. Results of bulk sampling testing 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. (%)
Pb 1	Room 010	Wall Paint	Brown/Orange	<0.0097%
Pb 2	Room 012	Wall Paint	Light Green	0.028%
Previously Identified Lead Paint Finishes				
211-1-LBP-031507-01	Exterior	Wall Paint	White	0.8%
211-3-LBP-031507-02	Room 304	Window Frames, Walls & Radiator Paint	White	<0.01%
211-3-LBP-031507-03	Room 306	Wall/ Ceiling Paint	Grey	0.37%
211-2-LBP-031507-04	Room 202	Walls Paint	Grey	0.09%
211-2-LBP-031507-05	Room 202	Doors and Frame Paint	Rose	0.05%
211-2-LBP-031507-06	Room 203	Wall, Window Frame and Trim Paint	White	0.02%
211-B-LBP-031507-07	Room 001	Stair Railing Paint	Pink/White	0.05v
538-LP-01	-	Walls Paint	Grey	0.054%
538-LP-02	-	Window & Door Frame Paint	Dark Grey	0.0082%
538-LP-03	-	Ceiling Paint	White	0.029%
538-LP-04	-	Walls	Orange	0.089%

The paint finishes highlighted in blue in the above table were determined to contain low lead concentrations, 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 remaining paints tested were below the laboratory limit of detection for lead. However, all other paints throughout the subject building that are not mentioned in this report must be considered to be lead-containing until confirmed by sampling and analysis.

Laboratory Certificates of Analysis for the paint samples are also included in Appendix C.

3.2.2 Battery Packs

MPL observed battery packs 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 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. Removing 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

No thermostats containing liquid mercury were observed throughout the subject building.

3.3.2 Fluorescent Light Tubes

Fluorescent light fixtures were identified throughout the subject building, containing 2 to 4 tubes per fixture. Mercury is likely to be present in vapour form in fluorescent light tubes.

3.3.3 Pressure Gauges and Float Switches

MPL did not identify pressure gauges or float switches 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, thermostats, and equipment 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/m^3.

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.

Any 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

Fluorescent lights illuminate the subject building. MPL assessed representative ballasts in the building, identified as non-PCB content. These light ballasts were observed to be manufactured by Phillips.

3.5.2 Transformers

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

Recommendations

Since no PCB-containing equipment was observed or suspected to be present during the site survey, no further action is required.

3.6 Ozone Depleting Substances (ODSs) and Other Halocarbon

Findings

A visual assessment for equipment potentially containing ODSs and other halocarbons was conducted. MPL observed equipment such as refrigerators, water fountains, water coolers, freezers, AC units, etc., which contain or are suspected of containing ODSs or other halocarbons.

No equipment containing ODSs or halocarbons was observed throughout the subject building.

Recommendations

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

Under the management of a licensed contractor, equipment containing R-22 and 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, which contain 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 surveyed area.

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. MPL did not observe any areas with obvious signs of visible mould growth.

3.9.2 Water Damage

A visual survey of the subject building was conducted to determine if water damage was present. MPL did not find any areas with water damage.

Recommendations

Since no mould growth and/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 hazardous materials 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

Pegah Parichehreh, M.Sc.
Project 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 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 (AMP) 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 asbestos containing materials is required prior to building demolition.

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 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., were not de-energized or disassembled to examine internal components or materials. These items should be considered to contain Designated Substances until proven otherwise.

During the survey, representative samples of suspect building materials were collected and sent to AIHA accredited independent laboratory for analysis. Laboratory Certificate of Analysis are attached in Appendix A.

Other potential designated substances 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 538-540 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 on the interior structure and finishes of the building. It did not consider current or past owner or occupant articles within the building (i.e. contents, furniture, etc.) and does 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 was examined as part of this survey. Due to concerns regarding certain historical analytical results, mainly in 2008 and prior years, confirmatory re-sampling was conducted for selected materials previously identified not to contain asbestos. However, building materials previously identified to be asbestos-containing were not re-sampled. The reports are listed as follows,

- Designated Substance Inventory by Conestoga-Rovers & Associates (dated April 2007, reference # 045870 (81));
- Draft Report- Asbestos & Lead Paint Survey by InAIR Environmental Ltd (dated September 2019, InAIR Project Reference: 19c137); and
- Hazardous Materials Survey by CM3 Envvironmental (dated April 2019, InAIR Project Reference: TLW2500).

Asbestos

Background Information on Asbestos

Asbestos is a generic name that has been given to a group of naturally occurring fibrous minerals. In the past, asbestos was commonly used as a component in building materials such as insulation, fireproofing and acoustic or decorative panels. Although there are many types of asbestos, the three main forms of commercial importance in Ontario are chrysotile, amosite and crocidolite.

An Asbestos-Containing Material (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 those materials that when dry 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 asbestos-containing materials are found. This is especially true where asbestos fibres may become airborne as a result of material ageing, physical damage, and 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 the identification of potential friable and non-friable asbestos-containing materials within 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 in accordance with 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 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, by troweling or	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5

	otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	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.	Other material	Any size	3

Preliminary identification of the samples was made using polarized light microscopy (PLM), with confirmation of presence and type of asbestos made 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.

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

Vinyl floors tiles were analyzed using the phase light microscopy (PLM) method of analysis. However, given the composition of vinyl floor products, the PLM analysis method may be prone to yielding false negative analytical results. Therefore, prior to removal or replacement, vinyl floor products previously identified to be 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 a combination of their condition and accessibility.

Evaluation of ACMs Based on Condition

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

- Good – Material shows no signs of damage and/or is encapsulated. Asbestos-containing material could remain in place until eventual building demolition or major renovation.
- Fair – Material shows signs of minor damage (<5% damage) or otherwise near the end of useful life. This includes minor shrinking, cracking, delamination and/ or other damage. 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 was also applied to other Designated Substances and hazardous materials where applicable. 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 shelf life of paint and to 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 haemoglobin 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.

Currently in Ontario, there is no regulatory limit that determines what concentration of lead 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 the importation or sale of products within Canada. Therefore, this is not to be misconstrued as a limit established to define a lead-containing material or a limit with respect to lead on construction projects.

The Environmental Abatement Council of Ontario (EACO) 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 the purpose of 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 EACO Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014) may also be implemented (Class 1-3).

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

To verify lead content in paints, representative bulk samples of paint and finishes suspected of containing lead were collected. Bulk samples were scraped down to the building base structure, with all possible layer's present, placed in sealed plastic bags and labeled; and then submitted to an independent laboratory for analysis. Samples were treated with a dilute nitric acid sample digestion prior to filtration. 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 poisoning in humans through the inhalation of vapours, ingestion of 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 demolition of the building. 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 products such as 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 product's useful life. Improper disposal of these mercury products poses a health and environmental risk to everyone. In addition, the disposal 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 of mercury 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 in the phosphor coating 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 therefore 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, then the facility must treat the waste as hazardous waste. 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 located throughout the structures. Free crystalline silica (□-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.

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 dielectric insulating fluid in electrical equipment such as transformers and capacitors, and in the fluorescent and HID lamp ballasts. The production of PCBs in the

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 a designated substance 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 period of 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 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. Production of ODSs in the form of hydro chlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) ceased in Canada in 1993 as a result of their ozone-depleting characteristics. Importation of CFCs into Canada ceased in 1997 and total ban was placed on their use since 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

There are two types of smoke detectors commonly found in building (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. The use of sealed radioactive material sources in fire detection systems is still permitted and regulated by the Canadian Nuclear Safety Commission (CNSC) 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 occurred. They will generally not occur if materials are kept dry.

MPL conducted a general visual assessment for any obvious 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 Ontario (EACO) 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 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 present in stable form within poly vinyl-chloride (PVC) piping and conduits and as a component of interior finishes. Such building materials are not considered to be hazardous in their current matrix/composition.

Acrylonitrile

Acrylonitrile or ACN (also known as vinyl cyanide) is an explosive, flammable liquid used in the manufacture of 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 and are not 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 the production of styrene, phenol, cyclohexane, and other organic chemicals, and in the manufacture of detergents, pesticides, solvents, and paint removers. It is also found in gasoline. Benzene may be present in stable form in roofing materials, paints and adhesives located throughout the subject building. Such building materials are not considered to be hazardous in their current matrix/composition.

Coke Oven Emissions

Coke oven emission is benzene soluble fraction of 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 used generally as a fumigant and sterilizing agent for medical equipment. It is used generally as a fumigant and sterilizing agent for medical equipment.

Isocyanates

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

In order to reduce the potential for exposure to workers or occupants, any suspect hazardous building material(s) that are not detailed within this survey due to inaccessibility and/or are discovered during renovation/demolition activities, must be properly 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 672000610
Customer ID: 55CTCS25B
Customer PO: 0Z2-021101
Project ID: Ottawa DSS

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

Phone: (613) 836-2184
Fax:
Collected: 3/ 3/2020
Received: 3/26/2020
Analyzed: 4/02/2020

Proj: University of Ottawa 0Z2-021101 (538-540 KED) (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 ***Lab Sample ID:*** **672000610-0001**
Sample Description: 538-540 KED/CT - Scattered pinholes with no fissures

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 1.2 ***Lab Sample ID:*** **672000610-0002**
Sample Description: 538-540 KED/CT - Scattered pinholes with no fissures

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 1.3 ***Lab Sample ID:*** **672000610-0003**
Sample Description: 538-540 KED/CT - Scattered pinholes with no fissures

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 2.1 ***Lab Sample ID:*** **672000610-0004**
Sample Description: 538-540 KED/VFT - Grey with grey and white

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.2 ***Lab Sample ID:*** **672000610-0005**
Sample Description: 538-540 KED/VFT - Grey with grey and white

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.3-Vinyl Floor Tile ***Lab Sample ID:*** **672000610-0006**
Sample Description: 538-540 KED/VFT - Grey with grey and white

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.3-Mastic ***Lab Sample ID:*** **672000610-0006A**
Sample Description: 538-540 KED/VFT - Grey with grey and white

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Yellow	0.0%	100.0%	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 672000610
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-Vinyl Floor Tile **Lab Sample ID:** **672000610-0007**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Red	0.0%	100.0%	None Detected	

Client Sample ID: 3.1-Mastic **Lab Sample ID:** **672000610-0007A**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: 3.1-Leveler **Lab Sample ID:** **672000610-0007B**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	10.0%	90.0%	None Detected	

Client Sample ID: 3.1-Joint Compound **Lab Sample ID:** **672000610-0007C**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 3.2-Vinyl Floor Tile **Lab Sample ID:** **672000610-0008**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Red	0.0%	100.0%	None Detected	

Client Sample ID: 3.2-Mastic **Lab Sample ID:** **672000610-0008A**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: 3.2-Leveler **Lab Sample ID:** **672000610-0008B**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	10.0%	90.0%	None Detected	

Client Sample ID: 3.3-Vinyl Floor Tile **Lab Sample ID:** **672000610-0009**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Red	0.0%	100.0%	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 672000610
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: 3.3-Mastic/Leveler **Lab Sample ID:** **672000610-0009A**
Sample Description: 538-540 KED/VFT - Orange with black marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray/Black	4.0%	96.0%	None Detected	Inseparable layers

Client Sample ID: 4.1-Layer 1 **Lab Sample ID:** **672000610-0010**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.1-Layer 2 **Lab Sample ID:** **672000610-0010A**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4.2-Layer 1 **Lab Sample ID:** **672000610-0011**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.2-Layer 2 **Lab Sample ID:** **672000610-0011A**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4.3-Layer 1 **Lab Sample ID:** **672000610-0012**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 4.3-Layer 2 **Lab Sample ID:** **672000610-0012A**
Sample Description: 538-540 KED/Ceiling Texture Coat

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 5.1 **Lab Sample ID:** **672000610-0013**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray/Beige/Gold	0.0%	100.0%	None Detected	Sample contains vermiculite which is a problem matrix; TEM with milling recommended

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 672000610
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: 5.2-Skim Coat **Lab Sample ID:** **672000610-0014**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 5.2-Base Coat **Lab Sample ID:** **672000610-0014A**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 5.3-Joint Compound 1 **Lab Sample ID:** **672000610-0015**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Tan	0.0%	98.0%	**2% Chrysotile**	

Client Sample ID: 5.3-Joint Compound 2 **Lab Sample ID:** **672000610-0015A**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	97.0%	**3% Chrysotile**	

Client Sample ID: 5.3-Drywall **Lab Sample ID:** **672000610-0015B**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	5.0%	95.0%	None Detected	

Client Sample ID: 5.4 **Lab Sample ID:** **672000610-0016**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 5.5 **Lab Sample ID:** **672000610-0017**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 5.6 **Lab Sample ID:** **672000610-0018**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

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 672000610
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: 5.7 ***Lab Sample ID:*** **672000610-0019**
Sample Description: 538-540 KED/Plaster

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020			Positive Stop (Not Analyzed)		

Client Sample ID: 6.1 ***Lab Sample ID:*** **672000610-0020**
Sample Description: 538-540 KED/VSF - Black with lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 6.2-Vinyl Sheet Flooring ***Lab Sample ID:*** **672000610-0021**
Sample Description: 538-540 KED/VSF - Black with lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 6.2-Mastic ***Lab Sample ID:*** **672000610-0021A**
Sample Description: 538-540 KED/VSF - Black with lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 6.3 ***Lab Sample ID:*** **672000610-0022**
Sample Description: 538-540 KED/VSF - Black with lines

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 7.1 ***Lab Sample ID:*** **672000610-0023**
Sample Description: 538-540 KED/VFT - Brown with white and grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 7.2 ***Lab Sample ID:*** **672000610-0024**
Sample Description: 538-540 KED/VFT - Brown with white and grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown/Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 7.3-Vinyl Floor Tile ***Lab Sample ID:*** **672000610-0025**
Sample Description: 538-540 KED/VFT - Brown with white and grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown/Gray/White	0.0%	100.0%	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 672000610
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: 7.3-Mastic **Lab Sample ID:** **672000610-0025A**
Sample Description: 538-540 KED/VFT - Brown with white and grey

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: 8.1 **Lab Sample ID:** **672000610-0026**
Sample Description: 538-540 KED/CT - Linear with pinholes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 8.2-Ceiling Tile **Lab Sample ID:** **672000610-0027**
Sample Description: 538-540 KED/CT - Linear with pinholes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 8.2-Joint Compound **Lab Sample ID:** **672000610-0027A**
Sample Description: 538-540 KED/CT - Linear with pinholes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 8.3 **Lab Sample ID:** **672000610-0028**
Sample Description: 538-540 KED/CT - Linear with pinholes

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Brown	95.0%	5.0%	None Detected	

Client Sample ID: 9.1 **Lab Sample ID:** **672000610-0029**
Sample Description: 538-540 KED/VFT - Grey with white marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 9.2-Vinyl Floor Tile **Lab Sample ID:** **672000610-0030**
Sample Description: 538-540 KED/VFT - Grey with white marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 9.2-Mastic **Lab Sample ID:** **672000610-0030A**
Sample Description: 538-540 KED/VFT - Grey with white marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Yellow	0.0%	100.0%	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 672000610
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: 9.3 ***Lab Sample ID:*** **672000610-0031**
Sample Description: 538-540 KED/VFT - Grey with white marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 10.1-Vinyl Floor Tile ***Lab Sample ID:*** **672000610-0032**
Sample Description: 538-540 KED/VFT - Beige with light and dark marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 10.1-Mastic ***Lab Sample ID:*** **672000610-0032A**
Sample Description: 538-540 KED/VFT - Beige with light and dark marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Insufficient Material	

Client Sample ID: 10.2-Vinyl Floor Tile ***Lab Sample ID:*** **672000610-0033**
Sample Description: 538-540 KED/VFT - Beige with light and dark marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 10.2-Mastic ***Lab Sample ID:*** **672000610-0033A**
Sample Description: 538-540 KED/VFT - Beige with light and dark marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: 10.3 ***Lab Sample ID:*** **672000610-0034**
Sample Description: 538-540 KED/VFT - Beige with light and dark marks

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 11.1 ***Lab Sample ID:*** **672000610-0035**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	Tan	0.0%	96.0%	**4% Chrysotile**	

Client Sample ID: 11.2 ***Lab Sample ID:*** **672000610-0036**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

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 672000610
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: 11.3 ***Lab Sample ID:*** **672000610-0037**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 11.4 ***Lab Sample ID:*** **672000610-0038**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 11.5 ***Lab Sample ID:*** **672000610-0039**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 11.6 ***Lab Sample ID:*** **672000610-0040**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 11.7 ***Lab Sample ID:*** **672000610-0041**
Sample Description: 538-540 KED/Drywall Joint Compound (DJC)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020				Positive Stop (Not Analyzed)	

Client Sample ID: 12.1 ***Lab Sample ID:*** **672000610-0042**
Sample Description: 538-540 KED/Texture Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 12.2 ***Lab Sample ID:*** **672000610-0043**
Sample Description: 538-540 KED/Texture Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: 12.3 ***Lab Sample ID:*** **672000610-0044**
Sample Description: 538-540 KED/Texture Coating

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	4/02/2020	White	0.0%	100.0%	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 672000610
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 (32)
Simon Parent PLM (20)

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

Report amended: 04/02/202015:37:49 Replaces initial report from: 04/02/202015:34:44 Reason Code: QA\QC-Comment Change

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

EMSL Canada Or	552003643
CustomerID:	55CTCS25B
CustomerPO:	0Z2-021101
ProjectID:	

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

Phone: (613) 836-2184
Fax:
Received: 03/30/20 11:08 AM
Collected:

Project: **University of Ottawa 0Z2-021101 "Ottawa DSS"**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
1		3/31/2020	0.2065 g	0.0097 % wt	<0.0097 % wt
552003643-0001	Site: Brown/orange paint (Room 010) Insufficient sample to reach reporting limit.				
2		3/31/2020	0.0725 g	0.028 % wt	0.028 % wt
552003643-0002	Site: Pink paint (door)				

Rowena Fanto, Lead Supervisor
or other approved signatory

*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. Unless noted, results in this report are not blank corrected. 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. When the information supplied by the customer can affect the validity of the results, it will be noted on the reoprt. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Initial report from 04/06/2020 09:18:49

APPENDIX D

Site Photographs

Photo 1: Representative view finishes observed within the subject building.

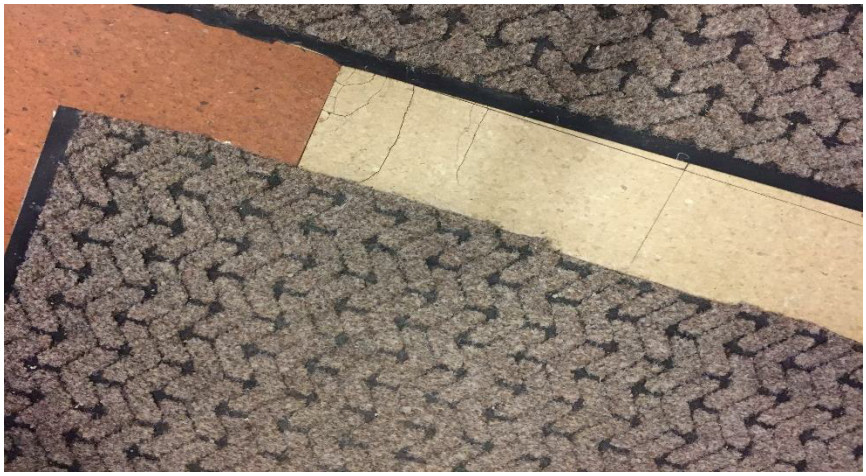


Photo 2: View of non-asbestos-containing vinyl floor tiles observed throughout the subject building.

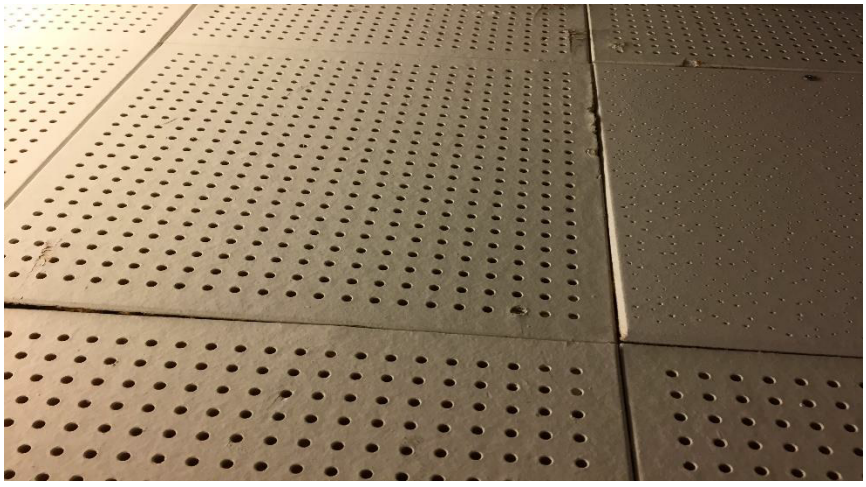


Photo 3: View of non-asbestos-containing ceiling tiles observed throughout the basement of the subject building.

Photo 4: View of lead-containing battery pack observed in emergency lights..

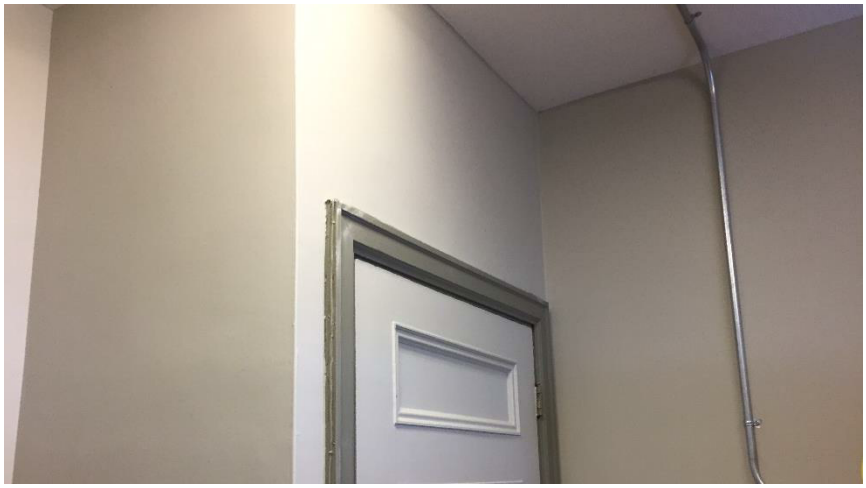


Photo 5: View of low-level leed containing paint and view of asbestos-containing drywall joint compound observed throughout the subject building.

Photo 6: Typical view of radioactive-containing smoke detectors observed throughout the subject buiding.

APPENDIX E

Asbestos-Containing Materials Checklists

Floor/Level	Room	ID	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
All	Throughout Subject Building	-	Drywall Joint Compound	White	Confirmed	-	Good Condition	Easy	Moderate	-	-	Manage in Place		
All	Throughout Subject Building	-	Wall & Ceiling Plaster	White/Grey	Confirmed	Friable	Good Condition	Easy	Moderate	-	-	Manage in Place		
All	Throughout Subject Building	-	Vermiculite in Plaster	White/Grey/ Gold	Suspected	Friable	Good Condition	Easy	Moderate	-	-	Manage in Place		
All	Throughout Subject Building	-	Brick Mortar	Grey	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
All	Throughout Subject Building	-	Concrete Block Mortar	Grey	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place		
All	Throughout Subject Building	-	Fire Doors	N/A	Suspected	-	Good Condition	Difficult	Low	-	-	Manage in Place		
Exterior	Throughout Subject Building	-	Roofing Materials	N/A	Suspected	-	Good Condition	Difficult	Low	-	-	Manage in Place		

APPENDIX F

Hazardous Materials Checklists

Floor/Level	Location	ID	DS Type	Component	Colour	Condition	Manufacturer	Quantity #	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatemen Cost	Comments
1	Room	113	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
1	Room	114	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		R134a
1	Room	115	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		R134a
1	Room	104	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		R134a
1	Room	102	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	206	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	203	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	216	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	214	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown

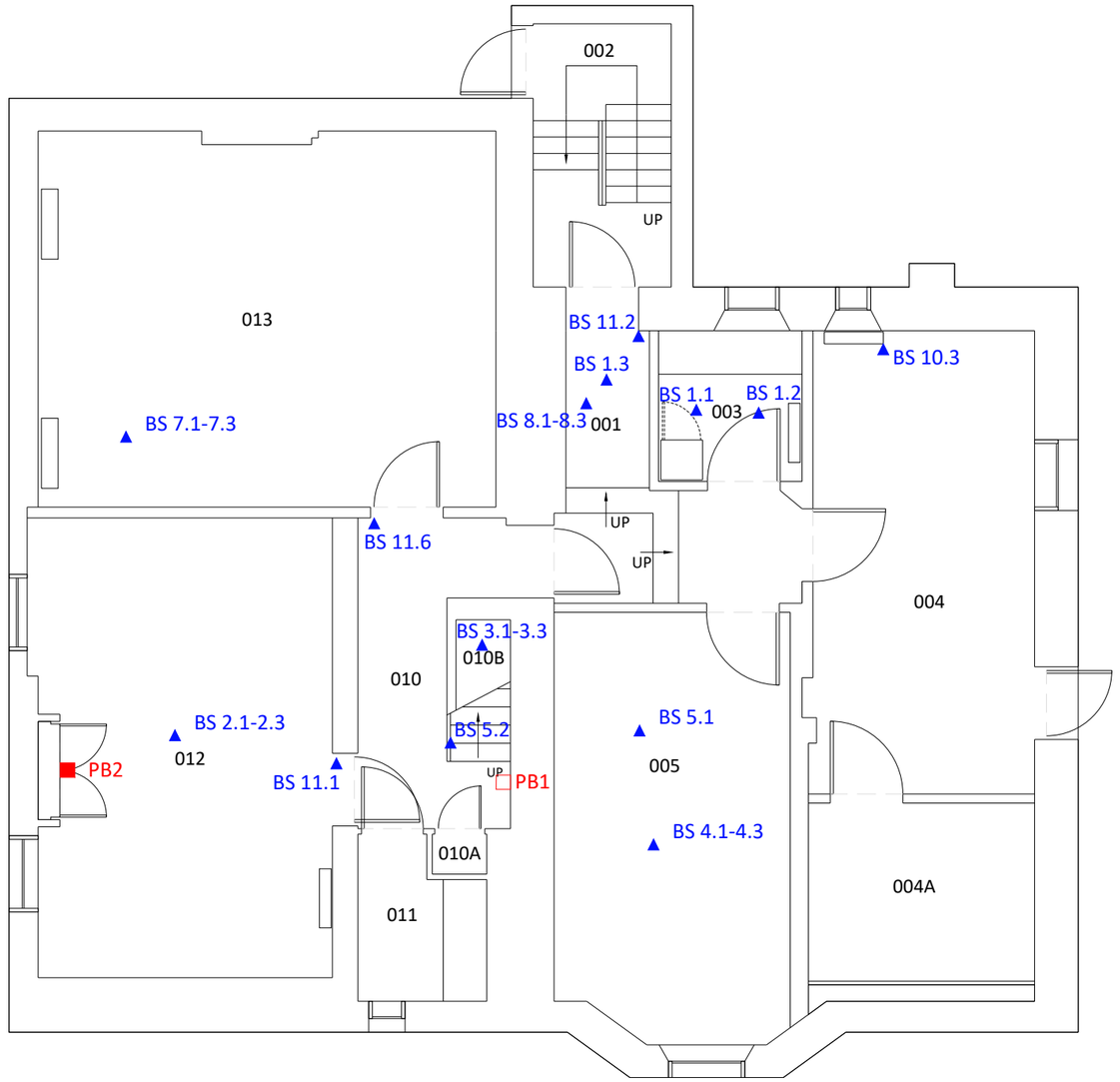
Floor/Level	Location	ID	DS Type	Component	Colour	Condition	Manufacturer	Quantity #	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatemen Cost	Comments
2	Room	215	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	213	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Room	212	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
2	Wall	202	Lead	Wall Paint	Grey	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
2	Room	202	Lead	Door Frame Paint	Rose	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
2	Room	203	Lead	Wall Paint	White	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		Wall, Window Frame and Trim Paint
3	Room	303	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
3	Room	305	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
3	Room	306	Lead	Wall/Ceiling Paint	Grey	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
All	Throughout the Subject Building	-	Radioactive Materials	Smoke Detector	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		

Floor/Level	Location	ID	DS Type	Component	Colour	Condition	Manufacturer	Quantity #	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatemen Cost	Comments
All	Throughout the Subject Building	-	Lead	Battery Pack	N/A	Good Condition	N/A	-	-	Confirmed	Manage in Place		
All	Throughout the Subject Building	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	Unknown	-	-	Confirmed	Manage in Place		
Basement	Room	004	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
Basement	Room	004	Ozone Depleting Substances (ODS)	Water Fountain	N/A	Good Condition	Haier	1	C	Confirmed	Manage in Place		Refrigerant Unknown
Basement	Room	13	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
Basement	Room	12	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place		Refrigerant Unknown
Basement	Room	001	Lead	Stair Railing	Pink/White	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
Basement	Room	12	Lead	Wall Paint	Light Green	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
Exterior	-		Lead	Wall Paint	White	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
All	Throughout the Subject Building	-	Lead	Wall Paint	Grey	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
All	Throughout the Subject Building	-	Lead	Door Frame Paint	Dark Grey	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		Window and Doorframe Paint

Floor/Level	Location	ID	DS Type	Component	Colour	Condition	Manufacturer	Quantity #	Unit	Suspected/ Confirmed	Recommended Action	Estimated Abatemen Cost	Comments
All	Throughout the Subject Building	-	Lead	Ceiling Paint	White	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		
All	Throughout the Subject Building	-	Lead	Wall Paint	Orange	Good Condition	N/A	Throughout	-	Confirmed	Manage in Place		

APPENDIX G

Site Sampling & Location Plans



Legend:

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

Note:

ACM plaster and drywall with ACM joint compound is present throughout

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: HAZARDOUS MATERIALS SURVEY
538-540 KING EDWARD, OTTAWA, ON

TITLE: MASTER DRAWING
LEVEL 00
SAMPLE LOCATION

SCALE: 1:100

DATE: JUNE 15, 2020

DRAWN: D.B

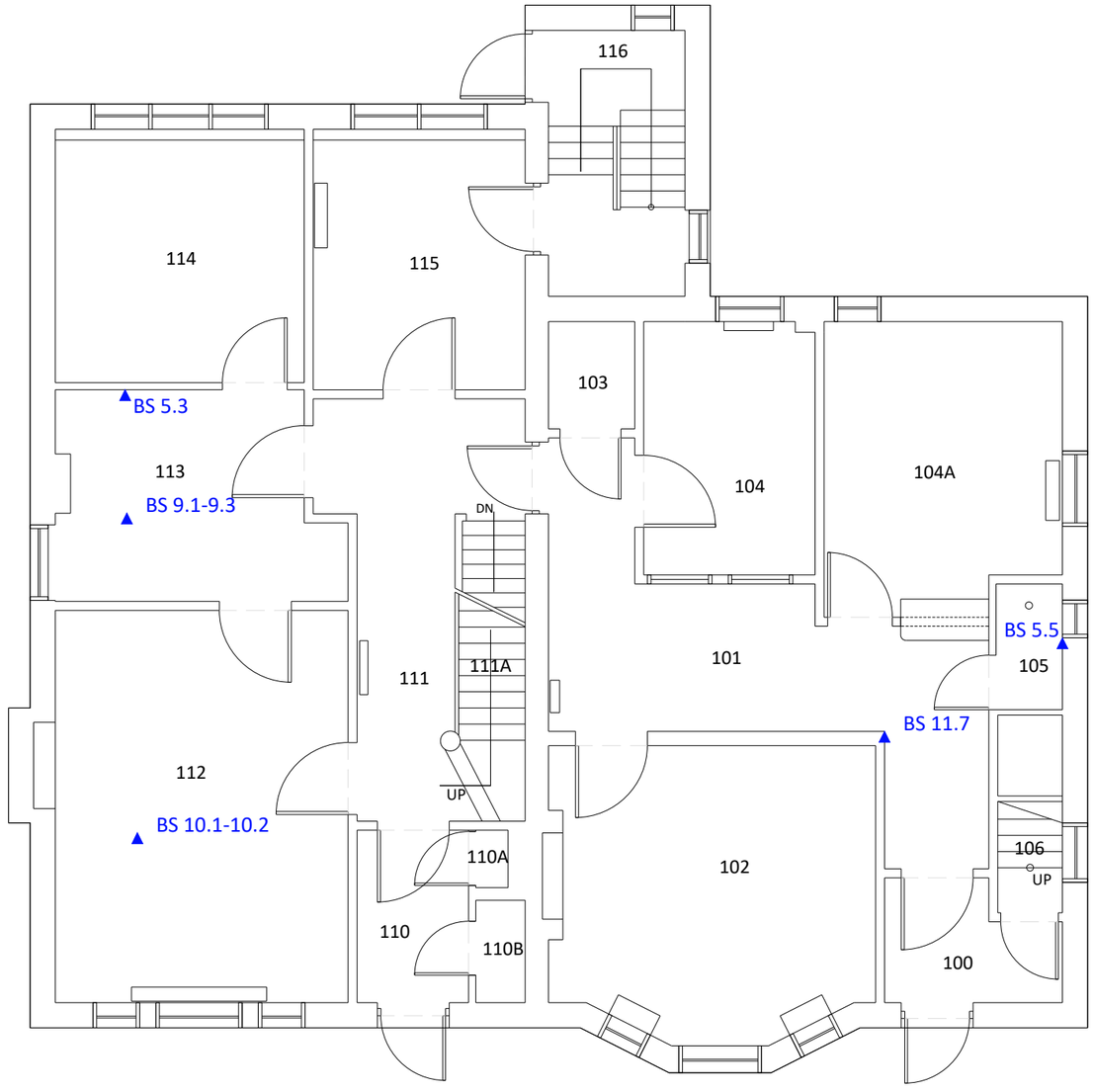
CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A-00

REV.:

W:\PROJECTS\OTTAWA\2020\HAZARDOUS - DESIGNATED SUBSTANCES\0Z2-02110-HZ PHASE IV\PROJECTS\14 538-540 KING EDWARD\DRAWINGS\DWG - SAMPLE LOCATIONS - 538-540 KING EDWARD.DWG



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

Note:

ACM plaster and drywall with ACM joint compound is present throughout

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: HAZARDOUS MATERIALS SURVEY
538-540 KING EDWARD, OTTAWA, ON

TITLE: MASTER DRAWING
LEVEL 01
SAMPLE LOCATION

SCALE: 1:100

DATE: JUNE 15, 2020

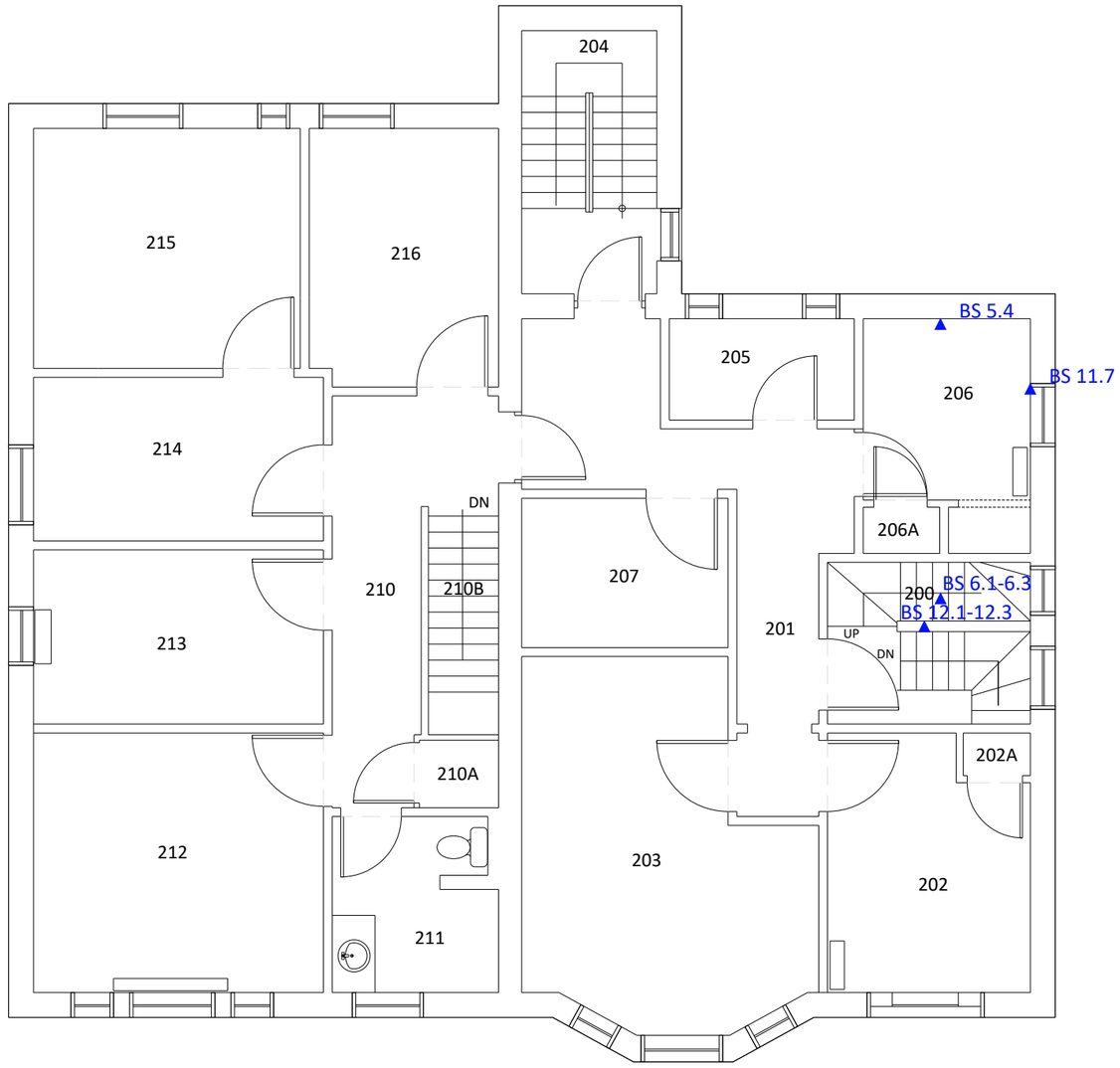
DRAWN: D.B

CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A-01

REV.:



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

Note:

ACM plaster and drywall with ACM joint compound is present throughout

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: HAZARDOUS MATERIALS SURVEY
538-540 KING EDWARD, OTTAWA, ON

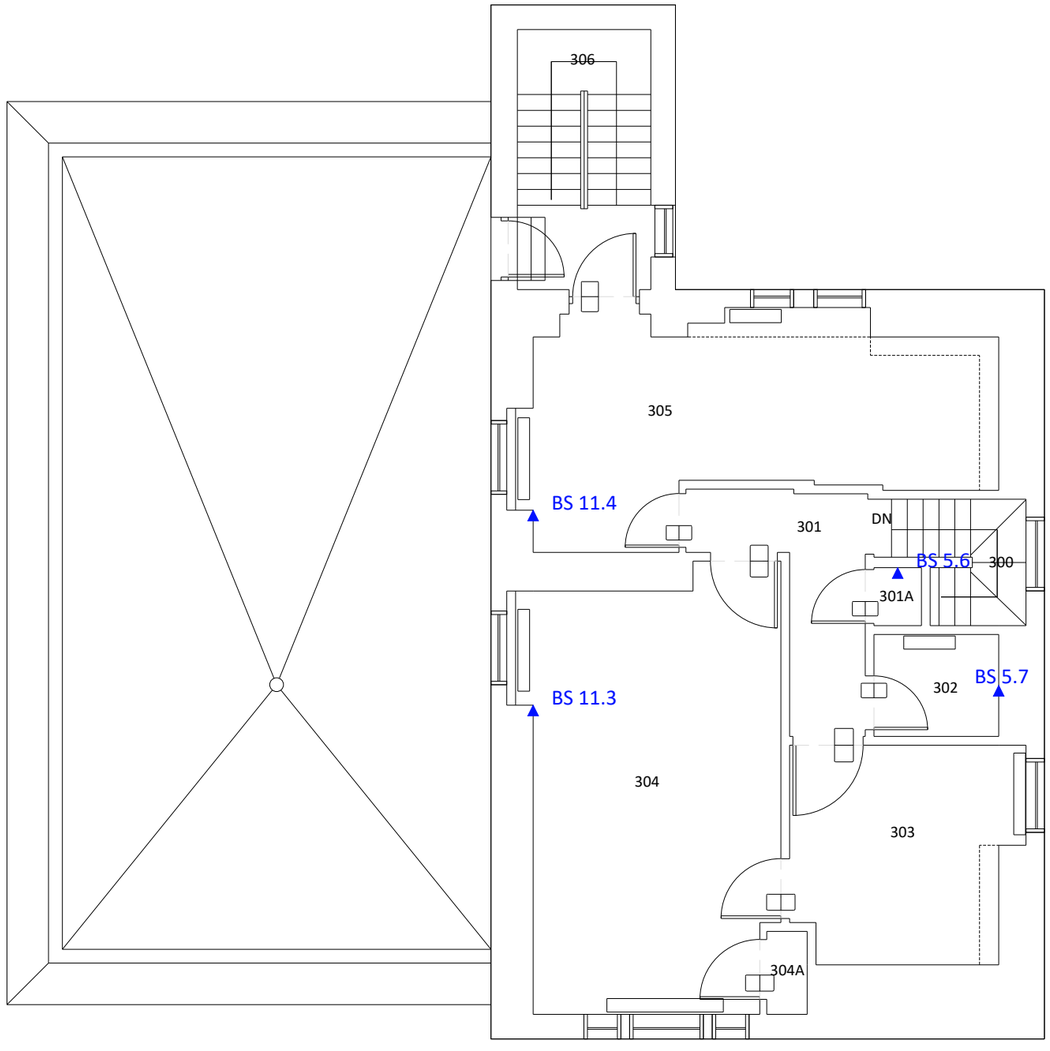
TITLE: MASTER DRAWING
LEVEL 02
SAMPLE LOCATION

SCALE:	DATE:
1:100	JUNE 15, 2020
DRAWN: D.B	CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A-02 REV.:

W:\PROJECTS\OTTAWA\2020\HAZARDOUS - DESIGNATED SUBSTANCES\022-02110\-HZ PHASE 1\PROJECTS\14 538-540 KING EDWARD\DRAWINGS\DWG - SAMPLE LOCATIONS - 538-540 KING EDWARD.DWG



Legend:

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

Note:

ACM plaster and drywall with ACM joint compound is present throughout

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: HAZARDOUS MATERIALS SURVEY
538-540 KING EDWARD, OTTAWA, ON

TITLE: MASTER DRAWING
LEVEL 03
SAMPLE LOCATION

SCALE: 1:100

DATE: JUNE 15, 2020

DRAWN: D.B

CHECKED: M.M.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A-03

REV.:

W:\PROJECTS\OTTAWA\2020\HAZARDOUS - DESIGNATED SUBSTANCES\022-02101-HZ PHASE I\PROJECTS\14 538-540 KING EDWARD\DRAWINGS\DWG - SAMPLE LOCATIONS - 538-540 KING EDWARD.DWG