HAZARDOUS MATERIALS SURVEY AND 2023 REASSESSMENT D'IORIO HALL, OTTAWA, ON

Project No.: Z2021101HZ / CCC-230252-00

Prepared for:

University of Ottawa

Prepared by:

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Date:

October 31, 2023

McINTOSH PERRY

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REASSESSMENT SURVEY 2023

The University of Ottawa retained McIntosh Perry Limited (MPL) to complete a Hazardous Materials Survey for the residence building, D'Iorio Hall, located at 10 Marie-Curie Private. MPL was also retained to reassess the condition of hazardous building materials found. The survey was conducted on May 21st and June 2nd, 2020. **The reassessment survey was completed on August 24th, 2023.**

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

The assessment and reassessment determined the following findings and recommendations.

Summary of the Reassessment Findings:

- Suspected ACM in Floor Tile Grout, Brick Mortar, Concrete Block, Transite and Roofing Materials were in Good Condition throughout the subject building.
- No mould or water-damaged materials 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

The University of Ottawa retained McIntosh Perry Limited (MPL) to complete a hazardous materials survey for D'Iorio Hall at 10 Marie-Curie Private. The survey was conducted on May 21st and June 2nd, 2020. **The reassessment survey was completed on August 24th, 2023.**

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

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

Table A: Summary of Asbestos-Containing Materials Identified

Material Description	Friable?	Location	Type of Asbestos
Fire Doors	-	Specific Areas Only	Suspected
Concrete Block Mortar	-	Specific Areas Only	Suspected
Ceramic Wall/Floor Tile Grout	-	Specific Areas Only	Suspected
Brick Mortar	-	Specific Areas Only	Suspected
Transite	-	Specific Areas Only	Suspected
Roofing Materials	-	Roof Level	Suspected

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

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

Table B: Summary of Designated Substances & Hazardous Materials Identified

Material Description	Location
Lead Paint	Specific Areas Only
Ozone-depleting Substances	Specific Equipment
Mercury Vapour	Specific Equipment
Mercury Liquid	Specific Equipment
Radioactive Materials	Specific Equipment
Silica	Throughout Building

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

Prior to any renovations or demolition activities throughout the building, designated substances 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 not assessed as part of this survey should be assumed to contain designated substances or hazardous materials until confirmed 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.

September 15, 2023

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

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

Re: 10 Marie-Curie Private, Ottawa, ON
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 and 2023 Reassessment at D'Iorio Hall at 10 Marie-Curie Private. The site is on the southwest corner of Louis Pasteur Private and Somerset Street East. The building survey was conducted on May 21st and June 2nd, 2020. **The reassessment survey was completed on August 24th, 2023.**

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

MPL completed the following,

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

2.0 PROPERTY DESCRIPTION

The subject building is a five-storey institutional building built in 1993 and approximately 99,050 square feet. The subject building was observed to be constructed with a concrete foundation. The exterior walls are finished with brick and a built-up flat roof. Throughout the subject building, interior walls were observed to be concrete block and drywall, and ceilings were observed to be mainly ceiling tiles and drywall. The floors were generally vinyl floor tile and ceramic tiles.

3.0 FINDINGS & RECOMMENDATIONS

Designated Substances

3.1 Asbestos

Findings

Seventy-six (76) bulk samples were previously collected during the survey and sent to an accredited laboratory for analysis. A summary of potential asbestos-containing samples collected along with the sample location, type and friability are presented in Table 1.

The 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	Room 316	VFT (12" x 12"- Grey Camo)	None Detected	N/A
BS 1.2	Room 316	VFT (12" x 12"- Grey Camo)	None Detected	N/A
BS 1.3	Room 316	VFT (12" x 12"- Grey Camo)	None Detected	N/A
BS 2.1	Room 316A	Drywall Joint Compound	None Detected	N/A
BS 2.2	Room 211	Drywall Joint Compound	None Detected	N/A
BS 2.3	Room 319	Drywall Joint Compound	None Detected	N/A
BS 2.4	Room 229A	Drywall Joint Compound	None Detected	N/A
BS 2.5	Room 214B	Drywall Joint Compound	None Detected	N/A
BS 2.6	Room 413A	Drywall Joint Compound	None Detected	N/A
BS 2.7	Room 422	Drywall Joint Compound	None Detected	N/A
BS 3.1	Room 402	Carpet Mastic (Yellow)	None Detected	N/A
BS 3.2	Room 402	Carpet Mastic (Yellow)	None Detected	N/A
BS 3.3	Room 402	Carpet Mastic (Yellow)	None Detected	N/A
BS 4.1	Room 333	VFT (12" x 12"- Beige w/ Purple Streaks)	None Detected	N/A
BS 4.2	Room 333	VFT (12" x 12"- Beige w/ Purple Streaks)	None Detected	N/A

Sample ID	Location	Material	Type and Content	Friability
BS 4.3	Room 333	VFT (12" x 12"- Beige w/ Purple Streaks)	None Detected	N/A
BS 5.1	Room 311	VFT (12" x 12"- White w/ Green, Brown & Grey Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 5.2	Room 311	VFT (12" x 12"- White w/ Green, Brown & Grey Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 5.3	Room 311	VFT (12" x 12"- White w/ Green, Brown & Grey Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 6.1	Room 306	VFT (12" x 12"- Grey w/ Black & White Flakes)	None Detected	N/A
		Mastic (Grey)	None Detected	N/A
BS 6.2	Room 306	VFT (12" x 12"- Grey w/ Black & White Flakes)	None Detected	N/A
		Mastic (Grey)	None Detected	N/A
BS 6.3	Room 306	VFT (12" x 12"- Grey w/ Black & White Flakes)	None Detected	N/A
		Mastic (Grey)	None Detected	N/A
BS 7.1	Room 327	VFT (12" x 12"- Grey & Black)	None Detected	N/A
		Mastic (Black/Yellow)	None Detected	N/A
BS 7.2	Room 327	VFT (12" x 12"- Grey & Black)	None Detected	N/A
		Mastic (Black/Yellow)	None Detected	N/A
BS 7.3	Room 327	VFT (12" x 12"- Grey & Black)	None Detected	N/A
		Mastic (Black/Yellow)	None Detected	N/A
BS 8.1	Room 425	VFT (12" x 12"- White w/ Black Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 8.2	Room 425	VFT (12" x 12"- White w/ Black Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 8.3	Room 425	VFT (12" x 12"- White w/ Black Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 9.1	Room 429	VFT (12" x 12"- Light Purple w/ Green & Brown Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 9.2	Room 429	VFT (12" x 12"- Light Purple w/ Green & Brown Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 9.3	Room 429	VFT (12" x 12"- Light Purple w/ Green & Brown Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 10.1	Room 427	VFT (12" x 12"- Light Purple w/ Black & Whites Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 10.2	Room 427	VFT (12" x 12"- Light Purple w/ Black & Whites Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 10.3	Room 427	VFT (12" x 12"- Light Purple w/ Black & Whites Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A

Sample ID	Location	Material	Type and Content	Friability
BS 11.1	Room 427	VFT (12" x 12"- Beige w/ Black & White Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 11.2	Room 427	VFT (12" x 12"- Beige w/ Black & White Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 11.3	Room 427	VFT (12" x 12"- Beige w/ Black & White Flakes)	None Detected	N/A
		Mastic (Black)	None Detected	N/A
BS 12.1	Room 404	VFT (12" x 12"- Dark Blue w/ Light and Dark Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 12.2	Room 404	VFT (12" x 12"- Dark Blue w/ Light and Dark Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 12.3	Room 404	VFT (12" x 12"- Dark Blue w/ Light and Dark Flakes)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 13.1	Room 426	VFT (12" x 12"- Light Grey Swirls)	None Detected	N/A
BS 13.2	Room 426	VFT (12" x 12"- Light Grey Swirls)	None Detected	N/A
BS 13.3	Room 426	VFT (12" x 12"- Light Grey Swirls)	None Detected	N/A
BS 14.1	Room 426	VFT (12" x 12"- Dark Grey Swirls)	None Detected	N/A
BS 14.2	Room 426	VFT (12" x 12"- Dark Grey Swirls)	None Detected	N/A
BS 14.3	Room 426	VFT (12" x 12"- Dark Grey Swirls)	None Detected	N/A
BS 15.1	Room 403	VFT (12" x 12"- Grey & Beige)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 15.2	Room 403	VFT (12" x 12"- Grey & Beige)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A
BS 15.3	Room 403	VFT (12" x 12"- Grey & Beige)	None Detected	N/A
		Mastic (Yellow)	None Detected	N/A

N/A – Not Applicable
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

No fireproofing was observed throughout the subject building.

3.1.2 Mechanical Pipe Insulation

3.1.2.1 Mechanical Pipe Straight Insulation

Mechanical pipe straight insulation was observed throughout the subject building. MPL made several incisions throughout to investigate its composition, and it was visually identified as fibreglass and, therefore, not suspected of containing asbestos.

3.1.2.2 Mechanical Piping Elbows/Fittings Insulation

Mechanical pipe elbows/fittings insulation was observed throughout the subject building. MPL made several incisions throughout to investigate its composition, and it was visually identified as fibreglass and, therefore, not suspected of containing asbestos.

3.1.2.3 Mechanical Piping Hangers Insulation

Mechanical pipe hanger insulation was observed throughout the subject building. MPL made several incisions throughout to investigate its composition, and it was visually identified as fibreglass and, therefore, not suspected of containing asbestos.

3.1.2.4 HVAC Duct Insulation

No HVAC duct 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

No texture finishes were observed throughout the subject building.

3.1.6 Plaster

No plaster finishes were observed throughout the subject building.

3.1.7 Drywall Joint Compound

Drywall joint compounds were observed and sampled throughout the building. The laboratory analytical results of the samples collected from Rooms 315A, 211, 319, 229A, 214B, 413A, and 422 indicate that this material does not contain asbestos.

3.1.8 Ceiling Tiles

Several different types of ceiling tiles were observed throughout the subject building as follows:

- Suspended ceiling tiles (2'x4' – Textured) were observed in Room 0027. This material was visually identified as fibreglass and, therefore, not suspected of containing asbestos.
- Suspended ceiling tiles (2'x4' – Textured) were observed in Room 316. The date stamp indicated that this material was manufactured in 2019 and, therefore, not suspected of containing asbestos.
- Suspended ceiling tiles (2'x4' – Pinholes & Small Fissures) were observed in Room 316. The date stamp indicated that this material was manufactured in 2019 and, therefore, not suspected of containing asbestos.
- Suspended ceiling tiles (2'x4' – Pinholes) were observed in Room 305. The date stamp indicated that this material was manufactured in 2016 and, therefore, not suspected of containing asbestos.

3.1.9 Vinyl Floor Tiles

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

- Vinyl floor tiles (12" x 12" – Grey Camo) were observed and sampled in Room 316. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos.
- Vinyl floor tiles (12" x 12" – Beige w/ Purple Streaks) were observed and sampled in Room 333. The laboratory analytical results indicate that this material does not contain asbestos.
- Vinyl floor tiles (12" x 12" – Beige w/ Purple Streaks) were observed and sampled in Room 311. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Yellow) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Grey w/ Black & White Flakes) were observed and sampled in Room 306. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Grey) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Grey & Black) were observed and sampled in Room 327. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Black/Yellow) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – White w/ Black Flakes) were observed and sampled in Room 425. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Black) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Light Purple w/ Green & Brown Flakes) were observed and sampled in Room 429. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Black) was also determined not to contain asbestos.

- Vinyl floor tiles (12" x 12" – Light Purple w/ Black & White Flakes) were observed and sampled in Room 427. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Black) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Beige w/ Black & White Flakes) were observed and sampled in Room 427. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Black) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Dark Blue w/ Light and Dark Flakes) were observed and sampled in Room 404. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Yellow) was also determined not to contain asbestos.
- Vinyl floor tiles (12" x 12" – Light Grey Swirls) were observed and sampled in Room 426. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos.
- Vinyl floor tiles (12" x 12" – Dark Grey Swirls) were observed and sampled in Room 426. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos.
- Vinyl floor tiles (12" x 12" – Grey & Beige) were observed and sampled in Room 403. The laboratory analytical results of the samples collected indicate that this material does not contain asbestos. The associated mastic (Yellow) was also determined not to contain asbestos.

3.1.10 Vinyl Sheet Flooring

No Vinyl Sheet Flooring was observed throughout the subject building.

3.1.11 Brick/Stone Mortar

To avoid damage and compromising the structure's integrity, no bulk samples of the brick/stone mortar were previously collected. Prior to any renovation or demolition, brick mortar should be examined and tested for asbestos content. Therefore, brick/stone mortar should be considered to contain asbestos until bulk samples and analysis confirm 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 previously 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 confirm otherwise.

3.1.13 Ceramic Wall / Floor Tile Grout

No bulk samples of the ceramic wall/floor tile grout were previously collected to avoid damage and compromise the structure's integrity. Prior to any renovation or demolition, the ceramic wall/floor tile grout should be examined and tested for asbestos content. Ceramic wall/floor tile grout should, therefore, be considered to contain asbestos until bulk samples and analysis confirm otherwise.

3.1.14 Transite (Asbestos Cement)

To avoid damage and compromising the structure's integrity, no bulk samples of the transite laboratory benchtops and cement board lining fume hoods were previously collected. Before any renovation or demolition, transite benchtops and fume hoods should be tested for asbestos content. Transite should, therefore, be considered to contain asbestos until bulk samples and analysis confirm otherwise.

3.1.15 Caulking

No caulking materials were observed throughout the subject building.

3.1.16 Mastic

Carpet mastic (Yellow) was observed and sampled in Room 402. The laboratory analytical results indicate that this material does not contain asbestos.

3.1.17 Cementitious Coating

No cementitious coating finishes were observed throughout the subject building.

3.1.18 Fire Doors

Fire doors were observed at various locations throughout the subject building. No bulk samples of the internal door insulation materials were previously 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.

3.1.19 Roofing Material

To avoid damage and compromising the integrity of the roofing material, no bulk samples of the roofing materials were previously 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 confirm otherwise.

Recommendations

- 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., benchtops and cement board linings, brick mortar, roofing materials, 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 confirmed 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 may be required based on expected changing site conditions, abatement and/or renovation activities.

3.2 Lead

Findings

3.2.1 Paint Finishes

Three (3) 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 413	Door Paint	Beige	<0.0081
Pb 2	Room 425	Wall Paint	Grey	<0.013
Pb 3	Room 413A	Door Paint	Red	<0.17
Previously Identified Lead Paint				
DRO-B-LBP-122107-01	Room 032	Hand Railing Paint	Purple	0.06
DRO-B-LBP-122107-02	Room 030	Door Paint	Blue	<0.02
DRO-B-LBP-122107-03	Room 032	Floor Paint	Grey	4.4

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 other paints tested were below the laboratory limit of detection for lead. However, paints throughout the subject building not mentioned in this report must be considered to be lead-containing unless sampling and analysis are confirmed otherwise.

3.2.2 Battery Packs

MPL did not observe any lead-containing acid 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 material 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 this regulation's Leachate Criteria (Schedule 4).

3.3 Mercury

Findings

3.3.1 Thermostat Switches

No thermostats containing liquid mercury were identified 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

Pressure gauges previously observed in Rooms 030 and 125 were suspected of containing liquid mercury.

Sump pumps with float switches were previously identified in Room 004A suspected of containing liquid mercury.

Recommendations

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

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 likely to impact silica-containing materials should be conducted 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

LED and fluorescent lights illuminate the subject building. MPL previously assessed representative ballasts in the building, identified as non-PCB content. These light ballasts were observed to be manufactured by Sylvania.

3.5.2 Transformers

No PCBs containing electrical transformers were observed throughout the subject building. Transformers that could be assessed were observed to be dry-type and manufactured by Hammond Manufacturing.

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. Equipment containing ODSs or other halocarbons was observed throughout the subject building.

Recommendations

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

Under the management of a licensed contractor, equipment containing R-134 and R404 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. MPL observed Kidde brand smoke detectors in Room 025, which contain small quantities of radioactive material.

Recommendations

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

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

Findings

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

Recommendations

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

3.9 Mould

Findings

3.9.1 Mould

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

3.9.2 Water Damage

A visual survey of the subject building was conducted to determine if water damage was present. MPL identified ceiling tiles throughout the subject building, which were affected by water damage.

Recommendations

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

Water-stained/damaged ceiling tiles observed throughout the subject building should be replaced as part of regular maintenance, and the water leakage's underlying cause should be identified and repaired.

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, the material should be tested and dealt with accordingly.

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

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

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

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

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

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

Yours truly,

MCINTOSH PERRY LIMITED

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

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

APPENDIX A

Regulatory Requirements

REGULATORY REQUIREMENTS

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

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

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

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

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

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

The Ministry of Labour has designated the following substances:

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

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

In addition, an owner of a building is required to have an Asbestos Management Plan if ACMs (friable or non-friable) are present in the building and are to remain in place. An inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once every 12 months 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.

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

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

APPENDIX B

Survey Methodology & Background Information

SURVEY METHODOLOGY

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

Materials that were homogeneous 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 hazardous materials until proven otherwise.

During the survey, representative samples of suspect building materials were previously collected and sent to CALAn accredited independent laboratory for analysis. Laboratory Certificates of Analysis are attached in Appendix C.

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

Investigated Areas

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

The assessment was directed at the interior structure and finishes of the building. It did not consider current or past owner or occupant articles throughout the building (i.e. contents, furniture, etc.) and 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 were 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, D'Iorio Hall, Ottawa, Ontario, prepared by Conestoga-Rovers & Associates (dated August 2008, reference # 045870 (51)).
- Hazardous Materials Survey: D'Iorio Hall, Ottawa, ON, prepared by Mcintosh Perry Limited (dated October 13, 2020, reference #0Z2021101HZ).

- Hazardous Materials Survey and 2022 Reassessment: D'Iorio Hall, Ottawa, ON, prepared by Mcintosh Perry Limited (dated September 15, 2022, reference # Z2021101HZ / CCC-230252-00).

Asbestos

Background Information on Asbestos

Asbestos is a generic name for a group of naturally occurring fibrous minerals. Asbestos was commonly used in building materials such as insulation, fireproofing and acoustic or decorative panels. Although there are many types of asbestos, Ontario's three primary forms of commercial importance are chrysotile, amosite and crocidolite.

An 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 due to material aging, physical damage, water damage or air movement.

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

Asbestos Survey Methodology

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

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

Fiberglass insulation was not submitted for analysis as it can be identified visually as non-asbestos material.

Building materials suspected of containing asbestos were identified, and representative sampling and laboratory testing of these materials was conducted. The number of bulk material samples collected from a homogeneous area was under Table 1. O. Reg. 278/05 s. 3 (3) below. Building materials suspected of containing asbestos were previously 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.		Less than 90 square metres	3

	Surfacing material, including, without limitation, material that is applied to surfaces by spraying, troweling or, such as acoustical plaster on ceilings and fireproofing materials on structural members	90 or more square metres but less than 450 square metres	5
		450 or more square metres	7
2.	Thermal insulation, except as described in item 3	any size	3
3.	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4.	Other material	Any size	3

Preliminary identification of the samples was made using polarized light microscopy (PLM), confirming the 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.

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

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

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

Evaluation of ACMs Based on Condition

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

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

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

Lead

Background Information on Lead

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

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

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

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

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

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

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

Mercury

Background Information on Mercury

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

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

Mercury is found in thermostats, temperature and pressure gauges, fluorescent lamps and batteries. Mercury in products can be released to the environment through breakage or disposal at the end of a useful life. Improper disposal of these mercury products poses a health and environmental risk to everyone. In addition, the 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 the thermostat switch contains approximately 3-4 grams in a glass ampoule, typically attached to a metal coil. Mercury-containing switches have been used in thermostats for over 40 years.

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

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

Silica

Background Information on Silica

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

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

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

Arsenic

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

Benzene

Benzene or benzol is a colourless liquid. It is used as an intermediate in producing styrene, phenol, cyclohexane, and other organic chemicals and to manufacture 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 a benzene-soluble fraction of the total particulate matter of the substances emitted into the atmosphere from metallurgical coke ovens.

Ethylene Oxides

Ethylene oxide is a colourless gas liquefying below 12°C. It is 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

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

To reduce the potential for exposure to workers or occupants, any suspect hazardous building material(s) not detailed within this survey due to inaccessibility and/or discovered during renovation/demolition activities must be 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 672000864
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: 5/25/2020
Received: 6/04/2020
Analyzed: 6/09/2020

Proj: University of Ottawa 0Z2-021101 (D'Iorio) (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:*** **672000864-0001**
Sample Description: D'Iorio/VFT - grey camo - Room 316

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/09/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 1.2 ***Lab Sample ID:*** **672000864-0002**
Sample Description: D'Iorio/VFT - grey camo - Room 316

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/09/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 1.3 ***Lab Sample ID:*** **672000864-0003**
Sample Description: D'Iorio/VFT - grey camo - Room 316

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/09/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2.1 ***Lab Sample ID:*** **672000864-0004**
Sample Description: D'Iorio/DJC - Room 315A

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/09/2020	White	0.0%	100.0%	None Detected	

Analyst(s):

Ewa Krupinska PLM (1)
Simon Parent PLM (3)

Reviewed and approved by:

Simon Parent, Laboratory Manager
or Other Approved Signatory

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

Samples analyzed by EMSL Canada Inc. Ottawa, ON

Initial report from: 06/09/202013:25:33

EMSL Canada Inc.

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

EMSL Canada Order 552006363
Customer ID: 55CTCS25
Customer PO: 0Z2021101HZ
Project ID:

Attn: Diana Banakh
McIntosh Perry
6240 Highway 7
Suite 200
Woodbridge, ON L4H 4G3

Proj: 0Z2021101HZ - DIORIO

Phone: (905) 856-5200
Fax: (905) 85-1455
Collected: 6/ 8/2020
Received: 6/11/2020
Analyzed: 6/18/2020

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

Client Sample ID: BS 2.2 ***Lab Sample ID:*** **552006363-0001**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 2.3 ***Lab Sample ID:*** **552006363-0002**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 2.4 ***Lab Sample ID:*** **552006363-0003**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 2.5 ***Lab Sample ID:*** **552006363-0004**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 2.6 ***Lab Sample ID:*** **552006363-0005**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 2.7 ***Lab Sample ID:*** **552006363-0006**
Sample Description: Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 3.1 ***Lab Sample ID:*** **552006363-0007**
Sample Description: Carpet Mastic (402)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

EMSL Canada Inc.

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

EMSL Canada Order 552006363
Customer ID: 55CTCS25
Customer PO: 0Z2021101HZ
Project ID:

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

Client Sample ID: BS 3.2 ***Lab Sample ID:*** **552006363-0008**
Sample Description: Carpet Mastic (402)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 3.3 ***Lab Sample ID:*** **552006363-0009**
Sample Description: Carpet Mastic (402)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 4.1 ***Lab Sample ID:*** **552006363-0010**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 4.2 ***Lab Sample ID:*** **552006363-0011**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 4.3 ***Lab Sample ID:*** **552006363-0012**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 5.1-Floor Tile ***Lab Sample ID:*** **552006363-0013**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 5.1-Mastic ***Lab Sample ID:*** **552006363-0013A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 5.2 ***Lab Sample ID:*** **552006363-0014**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

EMSL Canada Inc.

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EMSL Canada Order 552006363
Customer ID: 55CTCS25
Customer PO: 0Z2021101HZ
Project ID:

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

Client Sample ID: BS 5.3 ***Lab Sample ID:*** **552006363-0015**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.1-Floor Tile ***Lab Sample ID:*** **552006363-0016**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.1-Mastic ***Lab Sample ID:*** **552006363-0016A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.2-Floor Tile ***Lab Sample ID:*** **552006363-0017**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.2-Mastic ***Lab Sample ID:*** **552006363-0017A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.3-Floor Tile ***Lab Sample ID:*** **552006363-0018**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 6.3-Mastic ***Lab Sample ID:*** **552006363-0018A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 7.1 ***Lab Sample ID:*** **552006363-0019**
Sample Description: Carpet Mastic (Yellow) (114)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	Sample bag labelled "Room 327 VFT Grey and Black Mix BS 7.1"

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EMSL Canada Order 552006363
Customer ID: 55CTCS25
Customer PO: 0Z2021101HZ
Project ID:

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

Client Sample ID: BS 7.2-Floor Tile **Lab Sample ID:** **552006363-0020**
Sample Description: Carpet Mastic (Yellow) (114)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 7.2-Mastic **Lab Sample ID:** **552006363-0020A**
Sample Description: Carpet Mastic (Yellow) (114)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 7.3 **Lab Sample ID:** **552006363-0021**
Sample Description: Carpet Mastic (Yellow) (114)

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 8.1-Floor Tile **Lab Sample ID:** **552006363-0022**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 8.1-Mastic **Lab Sample ID:** **552006363-0022A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 8.2-Floor Tile **Lab Sample ID:** **552006363-0023**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: BS 8.2-Mastic **Lab Sample ID:** **552006363-0023A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 8.3-Floor Tile **Lab Sample ID:** **552006363-0024**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	White	0.0%	100.0%	None Detected	

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EMSL Canada Order 552006363
Customer ID: 55CTCS25
Customer PO: 0Z2021101HZ
Project ID:

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

Client Sample ID: BS 8.3-Mastic ***Lab Sample ID:*** **552006363-0024A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.1-Floor Tile ***Lab Sample ID:*** **552006363-0025**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.1-Mastic ***Lab Sample ID:*** **552006363-0025A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.2-Floor Tile ***Lab Sample ID:*** **552006363-0026**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.2-Mastic ***Lab Sample ID:*** **552006363-0026A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.3-Floor Tile ***Lab Sample ID:*** **552006363-0027**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 9.3-Mastic ***Lab Sample ID:*** **552006363-0027A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 10.1-Floor Tile ***Lab Sample ID:*** **552006363-0028**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

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Client Sample ID: BS 10.1-Mastic ***Lab Sample ID:*** **552006363-0028A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 10.2-Floor Tile ***Lab Sample ID:*** **552006363-0029**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 10.2-Mastic ***Lab Sample ID:*** **552006363-0029A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 10.3-Floor Tile ***Lab Sample ID:*** **552006363-0030**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Beige	0.0%	100.0%	None Detected	

Client Sample ID: BS 10.3-Mastic ***Lab Sample ID:*** **552006363-0030A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 11.1-Floor Tile ***Lab Sample ID:*** **552006363-0031**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Tan	0.0%	100.0%	None Detected	

Client Sample ID: BS 11.1-Mastic ***Lab Sample ID:*** **552006363-0031A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 11.2-Floor Tile ***Lab Sample ID:*** **552006363-0032**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Tan	0.0%	100.0%	None Detected	

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Client Sample ID: BS 11.2-Mastic ***Lab Sample ID:*** **552006363-0032A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 11.3-Floor Tile ***Lab Sample ID:*** **552006363-0033**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Tan	0.0%	100.0%	None Detected	

Client Sample ID: BS 11.3-Mastic ***Lab Sample ID:*** **552006363-0033A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Black	0.0%	100.0%	None Detected	

Client Sample ID: BS 12.1-Floor Tile ***Lab Sample ID:*** **552006363-0034**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Blue	0.0%	100.0%	None Detected	

Client Sample ID: BS 12.1-Mastic ***Lab Sample ID:*** **552006363-0034A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 12.2-Floor Tile ***Lab Sample ID:*** **552006363-0035**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Blue	0.0%	100.0%	None Detected	

Client Sample ID: BS 12.2-Mastic ***Lab Sample ID:*** **552006363-0035A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 12.3-Floor Tile ***Lab Sample ID:*** **552006363-0036**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Blue	0.0%	100.0%	None Detected	

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Client Sample ID: BS 12.3-Mastic **Lab Sample ID:** **552006363-0036A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 13.1 **Lab Sample ID:** **552006363-0037**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 13.2 **Lab Sample ID:** **552006363-0038**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 13.3 **Lab Sample ID:** **552006363-0039**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 14.1 **Lab Sample ID:** **552006363-0040**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 14.2 **Lab Sample ID:** **552006363-0041**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 14.3 **Lab Sample ID:** **552006363-0042**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 15.1-Floor Tile **Lab Sample ID:** **552006363-0043**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

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Project ID:

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

Client Sample ID: BS 15.1-Mastic ***Lab Sample ID:*** **552006363-0043A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 15.2-Floor Tile ***Lab Sample ID:*** **552006363-0044**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: BS 15.2-Mastic ***Lab Sample ID:*** **552006363-0044A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: BS 15.3-Floor Tile ***Lab Sample ID:*** **552006363-0045**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray	0.0%	100.0%	None Detected	

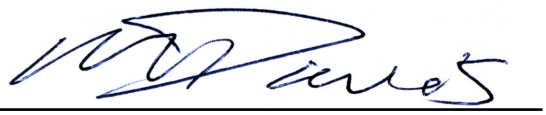
Client Sample ID: BS 15.3-Mastic ***Lab Sample ID:*** **552006363-0045A**
Sample Description: VFT

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	6/18/2020	Gray/Yellow	0.0%	100.0%	None Detected	

Analyst(s):

Anne Balayboa PLM (21)
Kira Ramphal PLM (47)

Reviewed and approved by:



Matthew Davis or other approved signatory
or Other Approved Signatory

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

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

Initial report from: 06/18/202016:18:18

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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: 06/05/20 11:23 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*
PB1		6/5/2020	0.2463 g	0.0081 % wt	<0.0081 % wt
552006006-0001	Site: D'Iorio - Beige Paint - Room 413				

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 06/12/2020 09:35:15

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EMSL Canada Or	552006364
CustomerID:	55CTCS25
CustomerPO:	0Z2021101HZ
ProjectID:	

Attn: **Diana Banakh**
McIntosh Perry
6240 Highway 7
Suite 200
Woodbridge, ON L4H 4G3

Phone: (905) 856-5200
Fax: (905) 856-1455
Received: 06/11/20 4:00 PM
Collected: 6/8/2020

Project: **0Z2021101HZ - DIORIO**

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

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
PB 2	6/8/2020	6/12/2020	0.1504 g	0.013 % wt	<0.013 % wt
552006364-0001	Site: Room 425 - Wall Paint (Grey) Insufficient sample to reach reporting limit.				
PB 4	6/8/2020	6/12/2020	0.0119 g	0.17 % wt	<0.17 % wt
552006364-0002	Site: Room 413A - Door Paint (Red) Insufficient sample to achieve quantitative result; result provided is an estimate.				

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 06/18/2020 11:05:21

APPENDIX D

Site Photographs

Photo 1: Representative view of the non-asbestos-containing mechanical insulation observed throughout the subject building.

Photo 2: Representative view of the non-asbestos-containing mechanical insulation observed throughout the subject building.

Photo 3: View of the sump pump suspected of containing a float switch with mercury liquid in Room 004A.

Photo 4: Representative view of the equipment containing ODSs observed throughout the subject building.

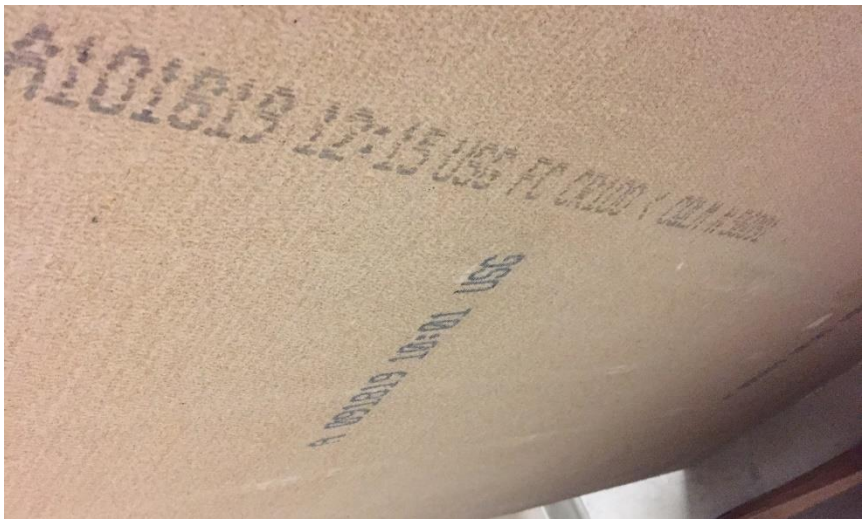


Photo 5: View of the non-asbestos-containing ceiling tiles observed in Room 316.

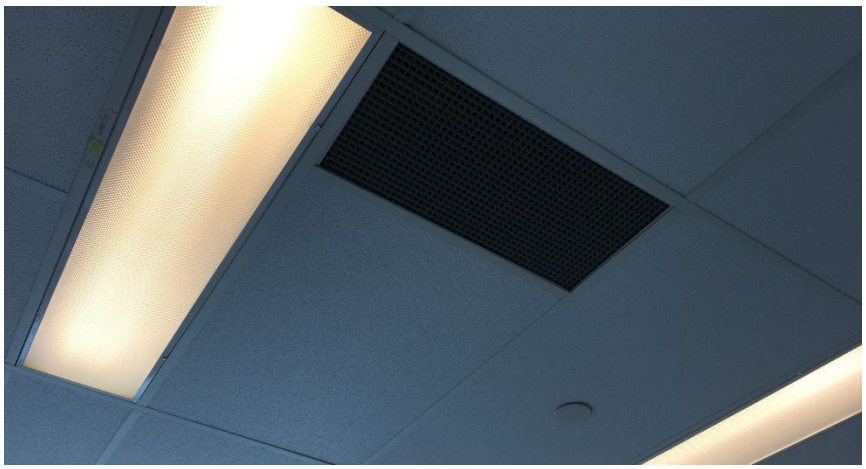


Photo 6: Representative view of the fluorescent light fixtures containing mercury vapour observed throughout the subject building.

Photo 7: View of lead-containing hand railing paint (Purple) observed to be in good condition located throughout the staircase.

APPENDIX E

Asbestos-Containing Materials Checklists

Floor/Level	Room	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action
0	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Brick/Stone Mortar		Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
3	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
4	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
5	Throughout Level	Brick/Stone Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
0	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
3	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
4	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place

Floor/Level	Room	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action
5	Throughout Level	Fire Doors	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
0	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
3	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
4	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
5	Throughout Level	Concrete Block Mortar	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
0	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
3	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place

Floor/Level	Room	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action
4	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
5	Throughout Level	Ceramic Wall/ Floor Tile Grout	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
0	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
3	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
4	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
5	Throughout Level	Transite Panel	Becnhtop	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
0	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
1.5	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
2	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place

Floor/Level	Room	Type of ACM	Description	Asbestos Confirmed/ Suspected	Friable/Non-Friable	Damaged/ Deteriorated	Accessibility	Level of Work Near Material	Approx. Quantity	Unit	Recommended Action
3	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
4	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
5	Throughout Level	Transite Panel	Cement Board	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place
6	Roof Level	Roofing Materials	-	Suspected	-	Good Condition	Easy	Low	-	-	Manage in Place

APPENDIX F

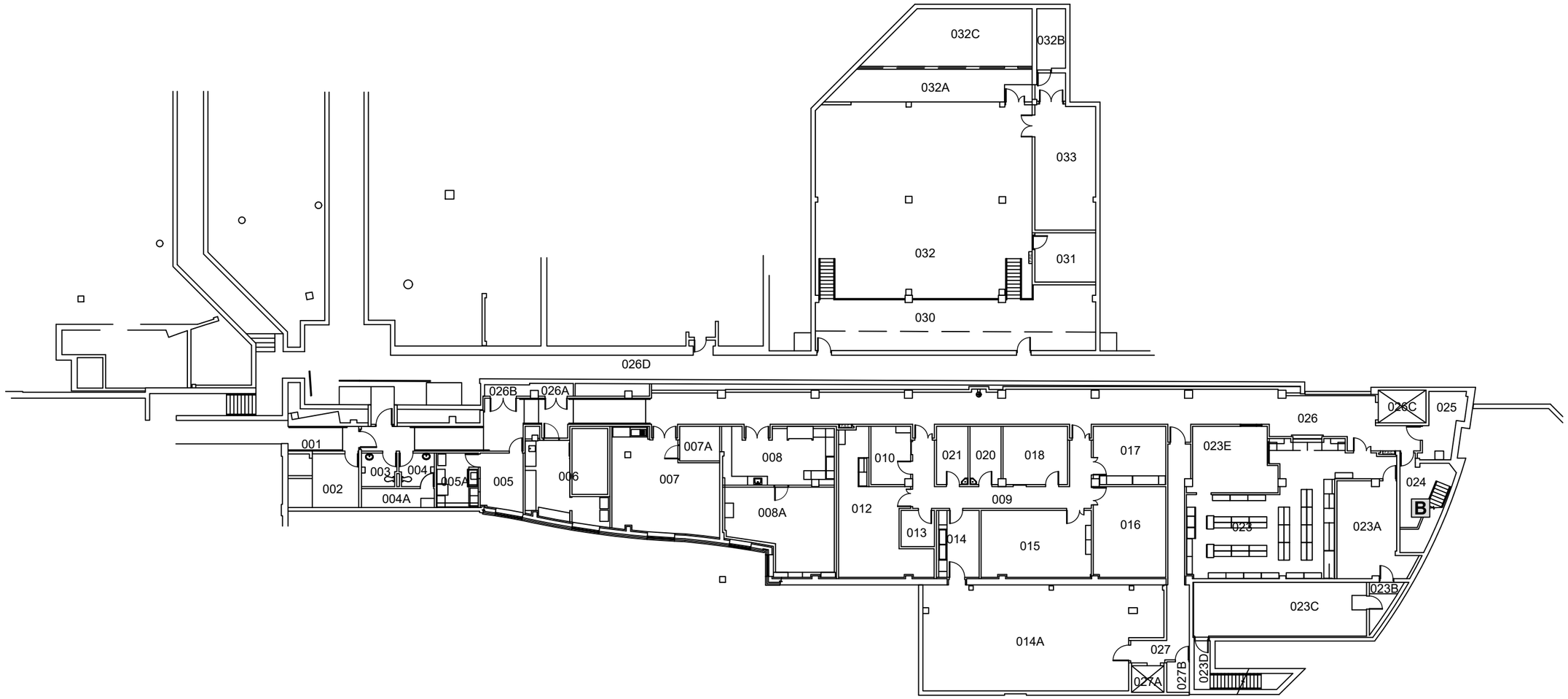
Hazardous Containing Materials Checklists

Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Comments
0	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
0	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
0	Room	004A	Mercury	Float Switch	N/A	Good Condition	-	2	C	Confirmed	Manage in Place	
0	Throughout Level	-	Lead	Hand Railing Paint	Purple	Good Condition	-	-	-	Confirmed	Manage in Place	
0	Throughout Level	-	Lead	Floor Paint	Grey	Good Condition	-	-	-	Confirmed	Manage in Place	
0	Room	025	Radioactive Materials	Smoke Detector	N/A	Good Condition	Kiddie	1	C	Confirmed	Manage in Place	
0	Room	030	Mercury	Pressure Gauge	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
1	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
1	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
1	Room	125	Mercury	Pressure Gauge	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
2	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
2	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
2	Room	239	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	Camco	1	C	Confirmed	Manage in Place	R134a
2	Room	239A	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	KeepRite	1	C	Confirmed	Manage in Place	R404
2	Room	238A	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place	R404a
3	Room	319	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	Unknown	1	C	Confirmed	Manage in Place	Unknown Refrigerant
3	Room	320C	Ozone Depleting Substances (ODS)	Air Conditioning Unit	N/A	Good Condition	KeepRite	1	C	Confirmed	Manage in Place	R404

Floor/Level	Room	ID	DS Type	Component	Colour	Condition	Manufacturer	Approx. Quantity	Unit	Suspected/ Confirmed	Recommended Action	Comments
3	Room	337	Ozone Depleting Substances (ODS)	Refrigerator	N/A	Good Condition	Danby	1	C	Confirmed	Manage in Place	R134a
3	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
3	Room	311	Water Damage	Ceiling Tile	N/A	Poor Condition	-	1	C	Confirmed	Should be replaced as part of regular maintenance.	
3	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
4	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
4	Room	425	Water Damage	Ceiling Tile	N/A	Poor Condition	-	1	C	Confirmed	Should be replaced as part of regular maintenance.	
4	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
5	Throughout Level	-	Mercury	Fluorescent Light Tubes	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
5	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	
6	Throughout Level	-	Silica	Concrete, Mortar, Etc.	N/A	Good Condition	-	-	-	Confirmed	Manage in Place	

APPENDIX G

Site Sampling & Location Plans



C:\USERS\DIANAB\ONEDRIVE - MCINTOSH PERRY\LMG DRAFTING\13. 10 MARIE CURIE (D'IORIO)\DWG - SAMPLE LOCATION - DIORIO.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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS LEVEL 0

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A0

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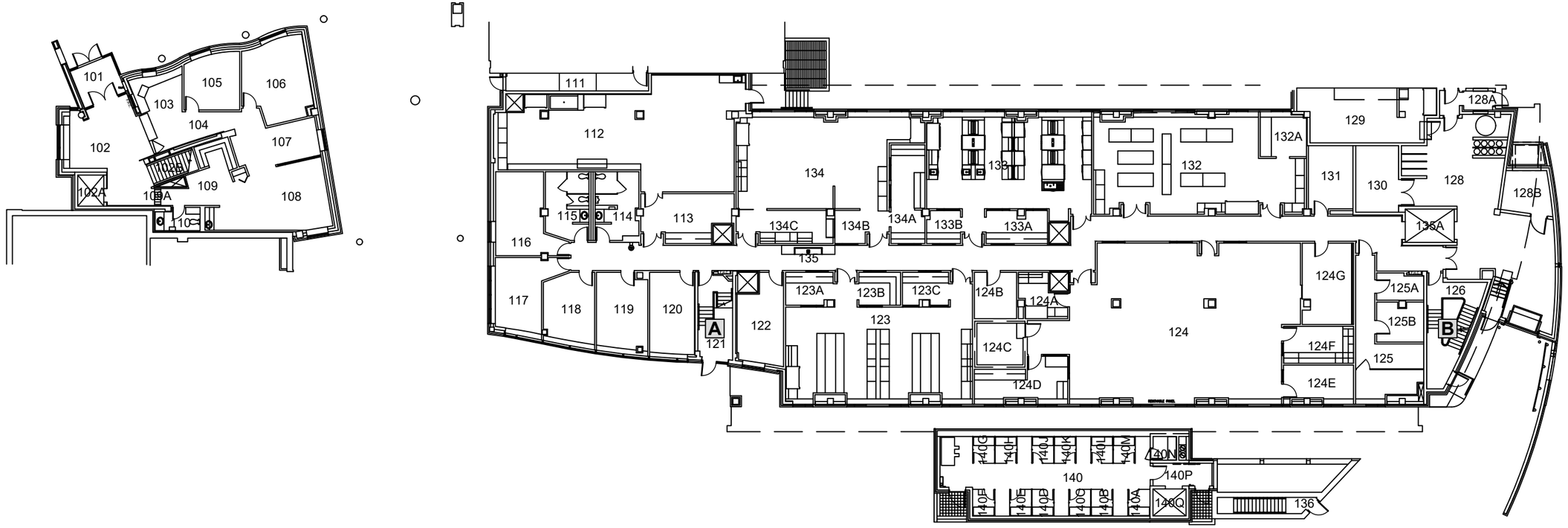

McINTOSH PERRY
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Legend:

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- □ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS LEVEL 1

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

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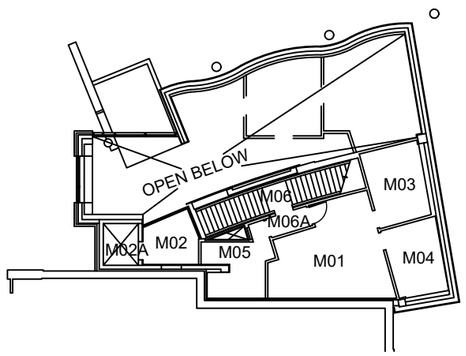

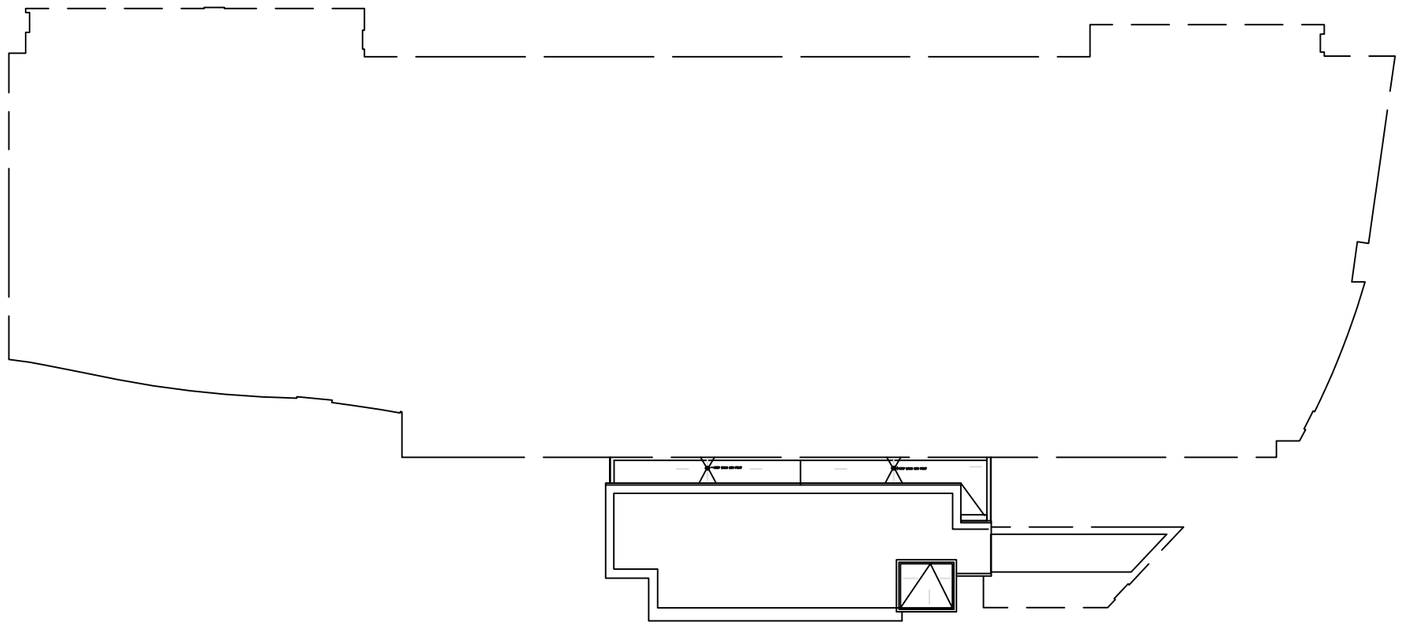

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McINTOSH PERRY
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Legend:

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- □ Lead Paint Sample <LOD
- ■ Lead Paint Sample >LOD

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS
LEVEL 1.5

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A1.5

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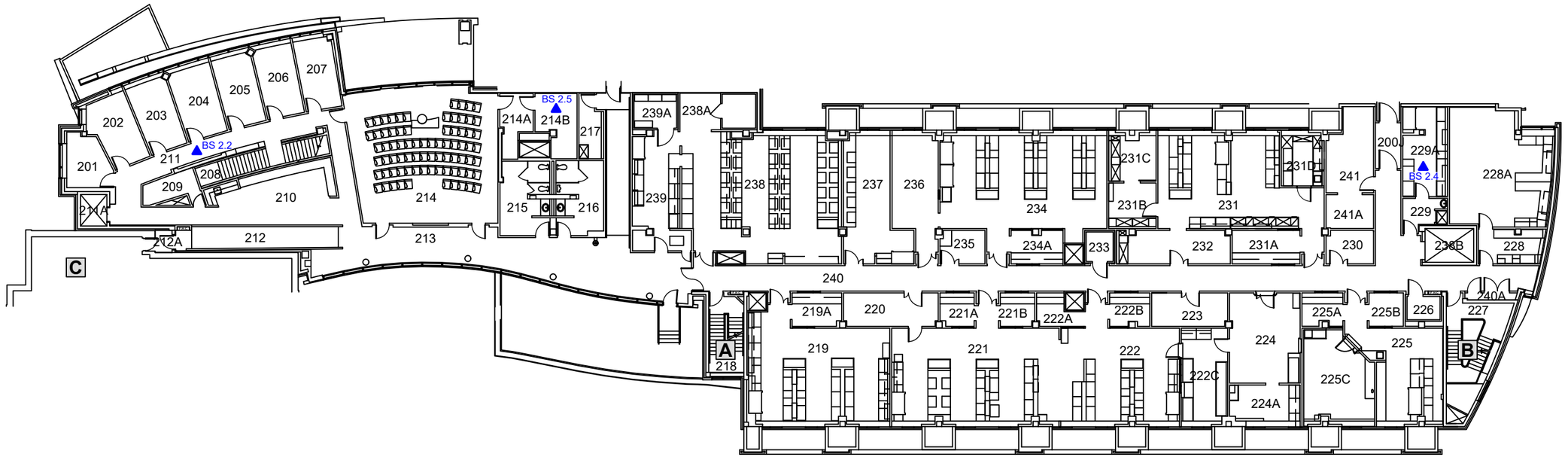

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McINTOSH PERRY
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Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS LEVEL 2

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

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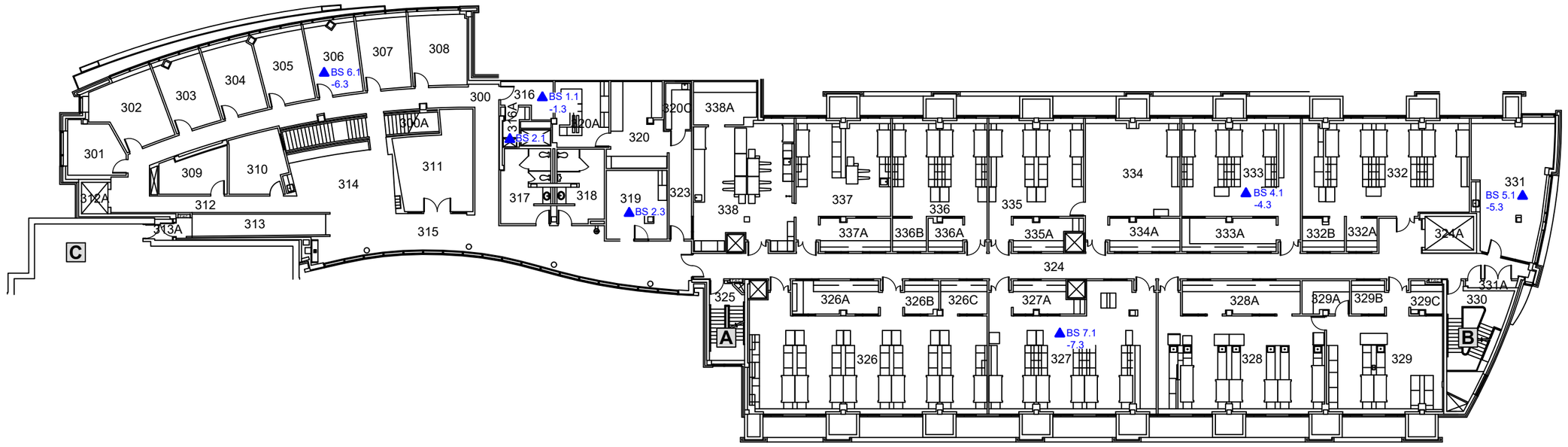

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Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS LEVEL 3

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A3

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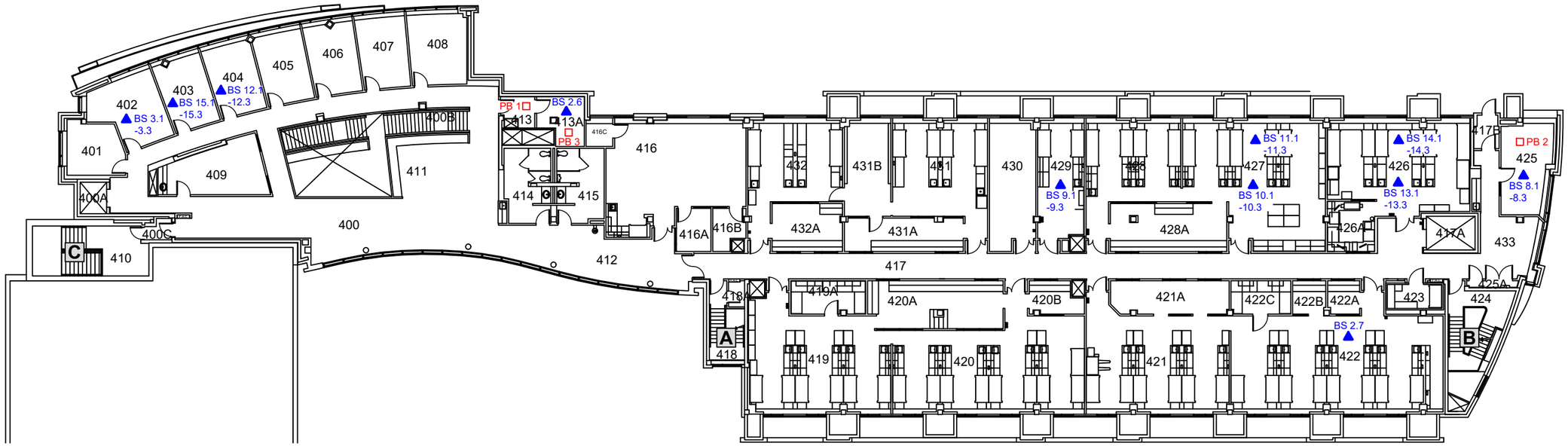

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Legend:

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS
LEVEL 4

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A4

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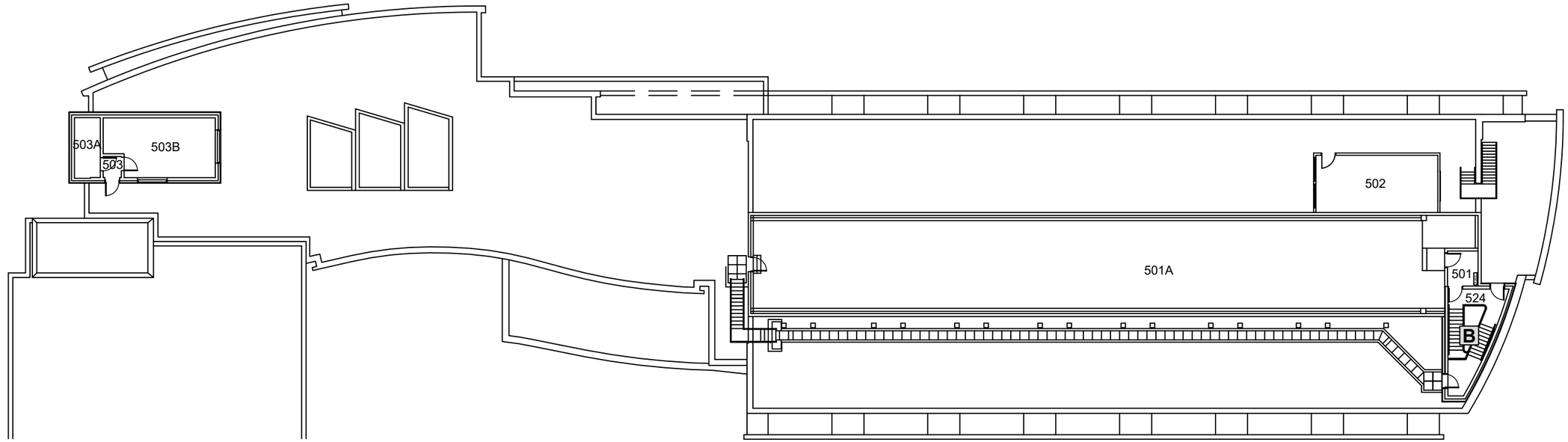

McINTOSH PERRY
6240 HIGHWAY 7 SUITE 200 WOODBRIDGE ON L4H 4G3
Tel: 905.856.5200 Fax: 905.695.0221
Toll Free: 1.888.348.8991 www.mcintoshperry.com

Legend:

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

CLIENT: UNIVERSITY OF OTTAWA

PROJECT: 10 MARIE CURIE (D'IORIO)
HAZARDOUS MATERIALS SURVEYS

TITLE: SAMPLE LOCATIONS
LEVEL 5

SCALE: 1:300

DATE: JULY 21, 2020

DRAWN: O.B.

CHECKED: C.W.

REV. NO.	DESCRIPTION	DATE	BY	APPD.

DRAWING NUMBER: A5

REV.: