

ADDENDUM NO. 2

Project:	PESC Fume Hood Recapitalization	Project / File No:	190001
Project Address:	2645 Dollarton Avenue, North Vancouver, BC	Date:	August 24 th , 2017
Tender Issue Date:	2017-07-28		
Tender Close Date:	2017-08-28	No. of Pages:	Twenty-nine written pages.

This addendum shall form part of, and be included in, the contract drawings and specifications originally issued for the above named project and no consideration will be given to request for extras to this Contract due to the Contractor not being familiar with the Addendum. Please acknowledge receipt of the Addendum on the Tender Form.

The following attached information forms part of this Addendum:

SPECIFICATIONS:

1. Section 00 01 10 Table of Contents:
 - a. Add Appendix A: Project-Specific Hazardous Building Materials Assessment – Site Review Report as attached herein.



PROJECT-SPECIFIC HAZARDOUS BUILDING MATERIALS ASSESSMENT – SITE REVIEW REPORT

Project:	Fume Hood Recapitalization Project		
Client:	Public Services and Procurement Canada	Stantec Project #:	123220871
Stantec Site Assessor:	Keith Irwin	Date of Site Visit:	April 25, 2017
Location:	Pacific Environmental Science Center, 2645 Dollarton Avenue North Vancouver, BC	Issue Date:	May 16, 2017

BACKGROUND

Stantec was retained by Public Services and Procurement Canada (PSPC) to conduct an area-specific, pre-renovation hazardous building materials assessment in support of the fume hood recapitalization project (the Project) for the Pacific Environmental Science Center (subject building). The assessment was limited to those building materials that may be impacted during the Project, which will occur specifically within rooms B113, B114, B115, B116, B117, the adjacent corridors, the B block main electrical room, the B block mechanical mezzanine and the B block roof (subject areas).

The purpose of the site review was to assess for hazardous building materials, particularly asbestos-containing materials (ACMs), lead-containing paints (LCPs), and ducting components with chemical residues that may require special handling and/or disposal practices in accordance with the requirements of the Canada Labour Code, Part II (Canada Labour Code) and the current version of British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97), during the Project.

STANDARDS, SCOPE AND METHODOLOGY

Applicable standards for each hazardous material considered during this assessment are summarized below, along with the scope and methodology completed pertaining to those materials, during this assessment.

- Asbestos
 - The presence of asbestos in federal workplaces, and pertaining to federally regulated workers is governed by the Canada Labour Code. The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. As primarily provincially regulated workers (e.g., contractors) are expected to carry out work activities associated with the Project, and as the provincial regulations are generally more prescriptive pertaining to asbestos (and generally include the requirements noted in the Canada Labour Code), this assessment was conducted to meet the requirements of BC Reg. 296/97.
 - According to the current version of BC Reg. 296/97, ACM means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.
 - The building materials that may require alteration during the Project, as directed by facility staff, were visually assessed for the presence of suspected ACMs.



Project number: 123220854
Inspection date: April 25, 2017

- Where observed, samples were collected from each “homogenous application” of suspected ACMs (materials suspected to contain asbestos that are uniform in material type, colour, texture application and estimated installation date—and for materials that had not been sampled or assessed previously) and submitted to EMSL Canada Inc. (EMSL) in Burnaby, British Columbia for analysis of asbestos content using polarized light microscopy (PLM) with dispersion staining, in accordance with the United States Environmental Protection Agency (EPA) 600/R-93/116 analytical method “Asbestos (bulk) by PLM.” EMSL’s analytical laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).
- The number of samples collected for each homogenous application of a suspected ACM was based on the recommendations provided in the WorkSafeBC publication *Safe Work Practices for Handling Asbestos*, 2012 (BC Asbestos Guide) along with the assessor’s experience and understanding of the consistency of the application of building materials.
 - o When asbestos is detected in concentrations greater than one half of one percent in one of the samples within a set that was collected to represent a “homogenous application” of a particular material (or detected in any concentration, in a set of samples collected for applications of vermiculite), the entire sample set and the entire application of that material is then considered to be an ACM.
- Lead
 - Exposure to lead is governed by the Canada Labour Code for federal workers, and by BC Reg. 296/97 for provincially regulated workers. According to both regulations, the Occupational Exposure Limit for lead is 0.05 milligram per cubic metre (mg/m³).
 - According to the WorkSafeBC manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry* (BC Lead Guideline), “...the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit”. As the exposure limit for lead that is referenced in both federal and provincial regulations is the same, Stantec will reference this value (600 mg/kg, equivalent to 600 parts per million, or “ppm”) in defining paints as “lead-containing”.
 - Samples of potential LCPs were collected from major paint applications on building materials that may be impacted during the Project.
 - The sampling of paint applications involved the collection of paint chip samples of paint layers to the substrate, where possible. Samples collected were submitted to EMSL for analysis of total lead content using EPA Method SW 846 3050B*/7000B. EMSL’s analytical laboratory is also accredited by the AIHA Environmental Lead Laboratory Approval Program (ELLAP).
- Ducting components with hazardous residues
 - Fume hoods are typically designed to remove gases, vapours, mists, fumes or airborne particulate associated with the hazardous chemicals that are used in them, to mitigate the potential for exposures for personnel using the chemicals.
 - Various hazardous chemicals may be susceptible to “hazardous deposition” inside fume hood ducting, particularly if the ducting and ventilation units are not functioning as intended.
 - If chemical deposits are present inside fume hood ducting, removal of such ducting may pose risks to workers conducting the removal.



Project number: 123220854
Inspection date: April 25, 2017

- The potential for hazardous substance residue/deposits within fume hood ducting and exhaust systems was assessed by conducting the following:
 - o Review of information provided by site staff regarding the types of chemicals used over the life-span of the fume hoods
 - o Collecting Safety Data Sheets (SDSs) for chemicals used in the fume hoods
 - o Visually assessing the interior conditions of the fume hoods for potential hazardous substance residue/deposits at the following locations:
 - Main work-bench
 - Flex duct connection joints above exhaust fan units in the mechanical mezzanine
- Other hazardous building materials
 - Various other hazardous building materials may be present that would have special handling and/or disposal considerations if they were to be impacted during the Project, but not limited to, electrical equipment with polychlorinated biphenyls (PCBs), mould and/or moisture impacted building materials, equipment with ozone-depleting substances, items or equipment containing mercury and building materials containing silica.
 - Assessment for the presence of other hazardous building materials was completed through visual means, as follows, specifically pertaining to building materials that may be impacted during the Project:
 - o A visual review for the presence of PCBs in electrical equipment was completed. Equipment that is generally suspected of containing PCBs includes lamp ballasts, transformers, hydraulic systems, compressors, switchgear and capacitors. No sampling of dielectric fluids was undertaken as part of this assessment.
 - o The presence of suspect visible mould was assessed through visual observations. Material observed with dark-coloured staining and/or a textured and discoloured appearance is described as “suspected mould”. Mould identified visually is defined as “suspected mould” unless it is confirmed as mould by laboratory analysis.
 - o An assessment for equipment likely to contain ODSs was completed. Information on the type of equipment, manufacturer and type and quantity of refrigerants was recorded, where available.
 - o An assessment for equipment that is likely to contain mercury was completed visually. Information on the type of equipment (i.e., gauges, switches, batteries, thermometers, etc.), model and serial numbers and quantities was recorded, where such information was available.
 - o An assessment for the presence of silica was conducted. The presence of silica in building materials such as concrete, masonry, stone, terrazzo, refractory brick, ceramic tile, ceiling tile etc. was noted.

PREVIOUS REPORTS

Stantec reviewed the previous reports outlined below prior to undertaking the assessment:

- Environment Canada Report entitled *Hazardous Materials Survey, Pacific Environmental Science Center, 2645 Dollarton Highway, North Vancouver, BC*, dated August 13, 2014, prepared by an Environment Canada Employee (Initial Assessment Report)



Project number: 123220854
 Inspection date: April 25, 2017



Stantec reviewed the Initial Assessment Report for information purposes, and the information provided was considered in developing the current assessment and sampling plan.

Site Review Results

With respect to hazardous building materials that may be impacted by the Project, the table below summarizes the findings of the assessment as well as sampling activities undertaken during the current assessment.





Sample locations (for samples collected as part of this current assessment) and locations of identified hazardous building materials (where practical) are provided on the floor plan drawings attached to this document.

Analytical certificates for the suspected ACM and suspected LCP samples collected as part of this assessment are also attached to this document.

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Main floor - fume hoods 28, 31 and 32	Potential asbestos-containing cement panel lining insides of fume hoods		CP-01	No Asbestos Detected
Mechanical mezzanine	Potential asbestos-containing red duct seam mastic applied to fume hood exhaust ducting		DM-01A DM-01B DM-01C	No Asbestos Detected





Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Mechanical mezzanine	Potential asbestos-containing grey duct seam mastic applied to supply air ducting		DM-02A DM-02B DM-02C	No Asbestos Detected
Roof	Potential asbestos-containing silver duct seam mastic applied to fume hood exhaust ducting		DM-03A DM-03B DM-03C	No Asbestos Detected
Roof	Potential asbestos-containing clear duct seam mastic applied to fume hood exhaust ducting		DM-04A DM-04B DM-04C	No Asbestos Detected
Roof	Potential asbestos-containing grey roof sealant applied to the base of fume hood exhaust ducting		RS-01A RS-01B RS-01C	No Asbestos Detected

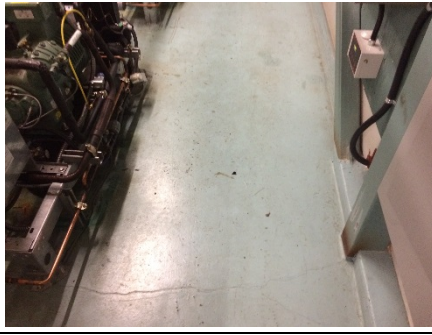





Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Mechanical mezzanine	Potential asbestos-containing grey fire stop applied to wall penetrations for fume hood exhaust ducting		FS-01A FS-01B FS-01C	No Asbestos Detected
Mechanical mezzanine	Potential asbestos-containing cream fire stop applied to floor penetration for fume hood 27 exhaust ducting	No Photo Available	FS-02A FS-02B FS-02C	No Asbestos Detected
Main electrical room	Potential asbestos-containing red fire stop applied to wall penetration for sprinkler system piping	No Photo Available	FS-03A FS-03B FS-03C	No Asbestos Detected
Main electrical room	Potential asbestos-containing orange fire stop applied to wall penetration for electrical conduit	No Photo Available	FS-04A FS-04B FS-04C	No Asbestos Detected
Roof	Potential asbestos-containing white/clear roof flashing mastic applied to seams of roof flashing around fume hood exhaust manifold		FM-01A FM-01B FM-01C	No Asbestos Detected


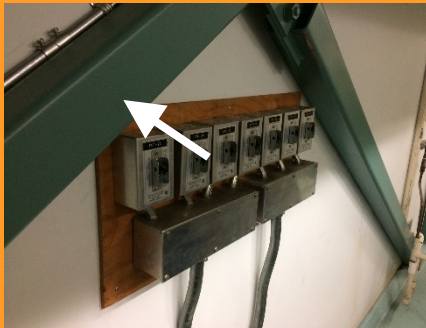

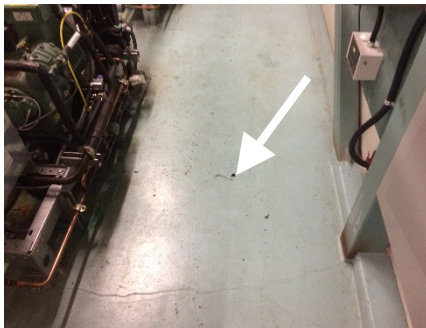


Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Mechanical mezzanine	Potential asbestos-containing concrete floor sealant applied to the floor		CFS-01A CFS-01B CFS-01C	No Asbestos Detected
Throughout	Potential asbestos-containing drywall joint compound		DJC-01A DJC-01B DJC-01C DJC-01D DJC-01E	No Asbestos Detected
Roof -	Potential asbestos-containing bitumen roof membrane on fume hood exhaust manifold		RM-01A RM-01B RM-01C	No Asbestos Detected
Block B – Room 106 laboratory storage cabinet	Previously presumed asbestos-containing cement (“Transite”) panel on the interior areas of the cabinet – no longer present in this location		Not sampled in Initial Assessment Report – listed as “presumed ACM”	No longer present



Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Throughout	Suspected lead-containing red paint on structural steel beams		P-01	1,900 ppm lead
Mechanical mezzanine	Suspected lead-containing green paint on structural steel bracing and columns throughout		P-02	450 ppm lead (current assessment) 1,800 ppm lead (Initial Assessment Report)
Mechanical mezzanine	Suspected lead-containing yellow paint on structural steel beams, bracing, columns and Q-decking throughout		P-03	5,600 ppm lead
Mechanical mezzanine	Suspected lead-containing green paint on concrete floor throughout		P-04	<90 ppm lead




Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Mechanical mezzanine	Suspect lead-containing grey paint on drywall walls throughout		P-05	<90 ppm lead
Roof	Suspect lead-containing green paint on steel/aluminum exhaust manifold frame and roof flashing		P-06	1,100 ppm lead
Fume hoods throughout	Suspect lead-containing cream paint		P-07	<740 ppm lead, potential LCP, further sampling may be required depending on work activities planned that will impact this material




Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Throughout subject areas	Lead (presumed) in: <ul style="list-style-type: none"> • Lead-acid batteries used in emergency lighting • Solder used in bell fittings for cast iron pipes and in electrical equipment 	No photo available	Expected to be present within the subject areas; not sampled	N/A
Fume Hoods (general)	Information pertaining to the operations and types of chemicals used in each fume hood was provided by PESC staff, and is attached to this document for reference. Chemicals with potential for "reactive" residues (e.g., picric acid or perchloric acid) do not appear to have been used.			
Mechanical mezzanine – Exhaust fan for fume hood 32	General dust observed on inner ducting surfaces. No particulate consistent with chemical residue/deposits observed Trace amounts of chemical deposits, if present, would not be present in significant quantities to require disposal as "hazardous waste"		N/A	N/A



Project number: 123220854
 Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Mechanical mezzanine – Exhaust fan for fume hood 29	<p>General dust observed on inner ducting surfaces.</p> <p>No particulate consistent with chemical residue/deposits observed.</p> <p>Liquid staining consistent with condensation observed.</p> <p>Trace amounts of chemical deposits, if present, would not be present in significant quantities to require disposal as "hazardous waste"</p>		N/A	N/A
Throughout subject areas	<p>The following were NOT observed pertaining to materials or equipment that may be impacted by the Project was observed:</p> <ul style="list-style-type: none"> • PCB-containing equipment • Mould-impacted materials • Mercury-containing equipment • ODS-containing equipment 	N/A	N/A	N/A



Project number: 123220854
Inspection date: April 25, 2017

Location	Hazardous Building Material Observations	Photo	Samples collected?	Analytical Results
Throughout subject areas	Silica is expected to be present in the following, which were observed in various locations throughout, and may require action during the Project: <ul style="list-style-type: none">• Concrete floors and edging• Gypsum and associated wall/ceiling finish materials• Suspended ceiling tiles• Asphalt roof membrane	N/A	N/A	N/A

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of site review and associated sampling conducted as outlined above and on our understanding of the Project requirements, the following conclusions and recommendations are provided:

Asbestos

- No asbestos was detected in samples of suspected ACMs collected and analyzed as part of this assessment or as part of the previous documents reviewed
- Should a material suspected to contain asbestos fibres that has not otherwise been assessed/tested become uncovered during the Project, all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present. Confirmed ACMs should be handled in accordance with the requirements of the following:
 - BC Reg. 296/97 and the *BC Asbestos Guide*.
 - The *Federal Transportation of Dangerous Goods Regulation*
 - The *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88).

Lead

- LCPs that were identified in the subject areas through this assessment, and that may require alteration during the Project include the following:
 - Green paint on structural steel bracing and columns throughout
 - Red paint on structural steel beams throughout
 - Yellow paint on structural steel beams, bracing and columns throughout
 - Green paint on steel/aluminum exhaust manifold frame and roof flashing



Project number: 123220854
Inspection date: April 25, 2017

- Cream paint on fume hoods throughout (potential LCP, further sampling may be required, if the fume hoods and associated paint will be destructively altered)
- Lead is also presumed to be present in:
 - Lead-acid batteries used in emergency lighting
 - Solder used in bell fittings for cast iron pipes and in electrical equipment
- If LCPs or other lead-containing equipment/materials within the subject building are to be disturbed and/or removed during the Project ensure compliance with the following:
 - The exposure protection requirements of the BC Reg. 296/97, including the provisions of the Lead Guideline
 - The transportation and disposal requirements of BC Reg. 63/88
 - The transportation requirements of the Federal Transportation of Dangerous Goods Regulation
- Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the BC Reg. 296/97 eight-hour occupational exposure limit (OEL) of 0.05 mg/m³ during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust.

Ducting components with hazardous residues

- Based on a review of information provided by site staff regarding fume hood use and observation of interior conditions of fume hood ducting and exhaust systems chemical residues/deposits do not appear to be present in types, forms or amounts that would require significant special handling or disposal procedures during the Project.
- As a measure of diligence in protecting the health and safety of workers conducting removal of fume hood ducting, and due to the potential for trace hazardous residues to be present on the inside of such ducting, the following should be implemented during dismantling fume hood ducting and exhaust systems:
 - Avoid skin contact with duct interior surfaces and/or exhaust system components through the use of disposable, chemically resistant gloves (e.g. rubber or nitrile) while dismantling/handling ducting and other exhaust equipment
 - Use of N95 (at minimum) type respirators
 - Wash hands and exposed skin with soap and warm water after handling ducting, and prior to eating, drinking or smoking
 - Do not eat, drink or smoke in the work area

Other Hazardous Building Materials

- If silica-containing materials within the subject building are to be disturbed and/or removed (e.g., coring through concrete) during the Project, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (cristobalite and quartz—each 0.025 mg/m³). This would include, but not be limited to, the following:
 - Providing workers with respiratory protection
 - Wetting the surface of the materials, use of water or dust suppressing agents to prevent dust emissions



Project number: 123220854
Inspection date: April 25, 2017

- Providing workers with facilities to properly wash prior to exiting the work area

LIMITATIONS

In preparation of this report, Stantec used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. Stantec relied on information gathered during the site investigation and laboratory analytical reports.

This report reflects the observations made within accessible and accessed areas of the subject areas that pertained to the Project only, and the results of analyses performed on the specific materials sampled during the assessment. Analytical results reflect the sampled materials at the specific sample locations.

This assessment was conducted pertaining only to the Project, and building materials expected to be disturbed by the Project. This assessment does not constitute a comprehensive hazardous materials assessment for the subject building.

This report has been prepared for the exclusive use of Public Services and Procurement Canada for the purpose of assessing general conditions within the subject areas associated with the Project. Any use that a third party makes of this report, or reliance on, or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



Project number: 123220854
Inspection date: April 25, 2017

CLOSING

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

We trust that the document meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

STANTEC CONSULTING LTD.

A handwritten signature in blue ink that reads "Keith Irwin".

Keith Irwin
Environmental Technologist
Phone: 604-412-3016
Keith.Irwin@stantec.com

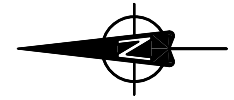
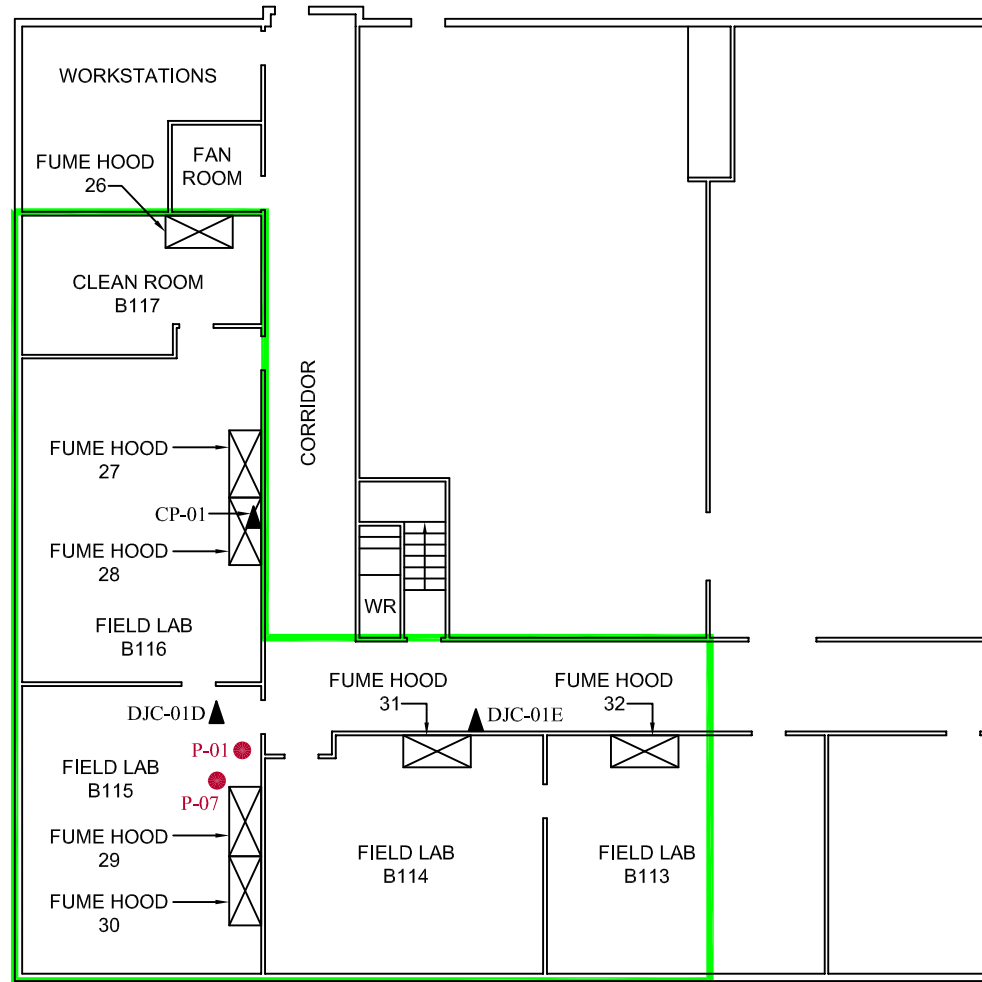
A handwritten signature in blue ink that reads "S. Brigden".

Sean Brigden, B.Sc., P.B.Dipl., CRSP
Senior Associate
Phone: 250-655-6062
Sean.Brigden@stantec.com

A handwritten signature in black ink that reads "Rob Robinson".

Rob Robinson, P.Eng.
Principal
Phone: 905-817-2070
Rob.Robinson@stantec.com

Attachments: Floor Plans—3 pages
Suspected ACM Bulk Sample Analytical Record (EMSL)—6 pages
Suspected LCP Sample Analytical Record (EMSL)—1 page
Fume Hood Chemical Use Summary – 2 pages



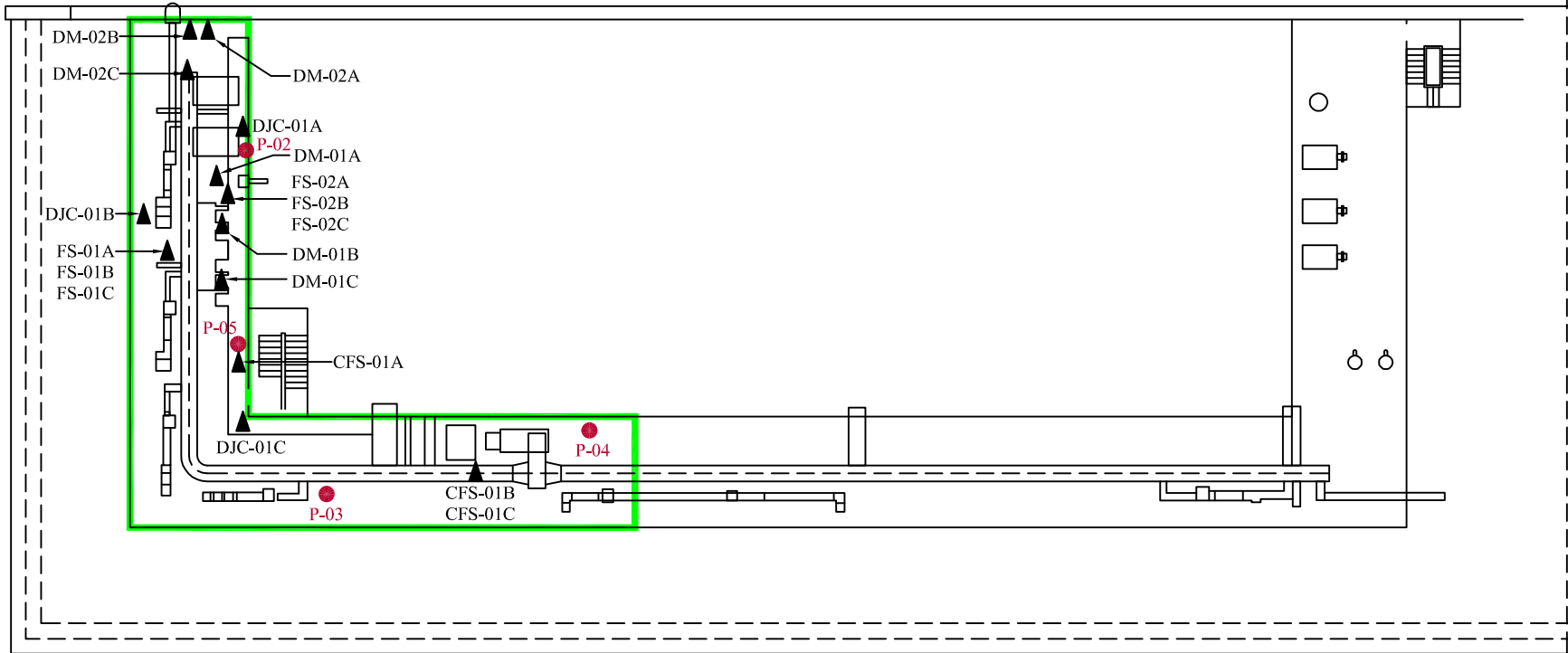
**MAIN FLOOR NORTH
FIELD OPERATIONS CENTRE
BLOCK B**

LEGEND

- ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- SUBJECT AREA

NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

<p>FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS PACIFIC ENVIRONMENTAL SCIENCE CENTRE 2645 DOLLARTON AVENUE, NORTH VANCOUVER, BC</p>	Project No.: 123220871	1	
	Scale: N.T.S.		
	Date: 17/05/10		
	Dwn. By: CD <small>SL2017050177</small> VM/CS		
Client: PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)	App'd By: TW		



**MECHANICAL MEZZANINE
FIELD OPERATIONS CENTRE
BLOCK B**

LEGEND

- ▲ ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- SUBJECT AREA

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<p>FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS PACIFIC ENVIRONMENTAL SCIENCE CENTRE 2645 DOLLARTON AVENUE, NORTH VANCOUVER, BC</p>	Project No.: 123220871	2	
	Scale: N.T.S.		
	Date: 17/05/10		
	Dwn. By: CD <small>SL2017050178</small> VM/CS		
Client: PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)	App'd By: TW		



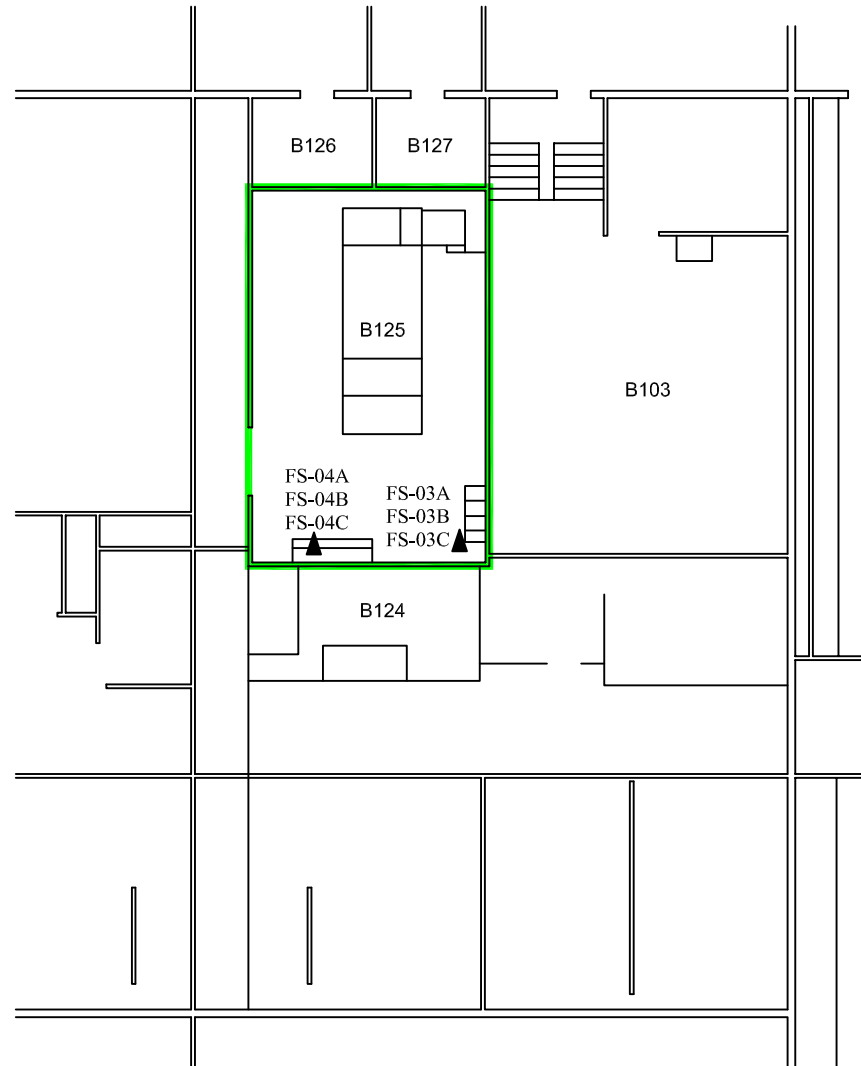
**ROOF
BLOCK B**

LEGEND

- ▲ ASBESTOS BULK SAMPLE
- LEAD PAINT SAMPLE
- SUBJECT AREA

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FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS PACIFIC ENVIRONMENTAL SCIENCE CENTRE 2645 DOLLARTON AVENUE, NORTH VANCOUVER, BC	Project No.: 123220871	Dwg. No.: 3	
	Scale: N.T.S.		
	Date: 17/05/10		
	Dwn. By: CD <small>SL2017050179 VM/CS</small>		
Client: PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)	App'd By: TW		



**MAIN FLOOR
MAIN ELECTRICAL ROOM B125
BLOCK B**

LEGEND

- ▲ ASBESTOS BULK SAMPLE
- SUBJECT AREA

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<p>FLOOR PLAN SHOWING HAZARDOUS BUILDING MATERIALS AND BULK SAMPLE LOCATIONS PACIFIC ENVIRONMENTAL SCIENCE CENTRE 2645 DOLLARTON AVENUE, NORTH VANCOUVER, BC</p>	Project No.: 123220871	<p>Dwg. No.: 4</p>	
	Scale: N.T.S.		
	Date: 17/05/10		
	Dwn. By: CD CS SL2017050180		
Client: PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)	App'd By: TW		



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<http://www.EMSL.com> / vancouverlab@EMSL.com

EMSL Canada Order 691700798
 Customer ID: 55JACQ30L
 Customer PO: 123220871.200
 Project ID:

Attn: Keith Irwin
 Stantec Consulting, Ltd.
 500 - 4730 Kingsway
 Burnaby, BC V5H 0C6

Phone: (604) 412-3004
Fax:
Collected:
Received: 4/27/2017
Analyzed: 5/04/2017

Proj: 123220871.200

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: CP-01 **Lab Sample ID:** 691700798-0001

Sample Description: MAIN FLOOR - INSIDE LINING OF FUME HOOD 28

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Gray	15%	85%	None Detected	

Client Sample ID: DM-01A **Lab Sample ID:** 691700798-0002

Sample Description: MECHANICAL MEZZANINE - APPLIED TO FUME HOOD 27 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Red	0.0%	100%	None Detected	

Client Sample ID: DM-01B **Lab Sample ID:** 691700798-0003

Sample Description: MECHANICAL MEZZANINE - APPLIED TO FUME HOOD 26 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Red	0.0%	100%	None Detected	

Client Sample ID: DM-01C **Lab Sample ID:** 691700798-0004

Sample Description: MECHANICAL MEZZANINE - APPLIED TO FUME HOOD 31 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Red	0.0%	100%	None Detected	

Client Sample ID: DM-02A **Lab Sample ID:** 691700798-0005

Sample Description: MECHANICAL MEZZANINE - APPLIED TO SUPPLY AIR DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: DM-02B **Lab Sample ID:** 691700798-0006

Sample Description: MECHANICAL MEZZANINE - APPLIED TO SUPPLY AIR DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray/Red	0.0%	100%	None Detected	

Client Sample ID: DM-02C **Lab Sample ID:** 691700798-0007

Sample Description: MECHANICAL MEZZANINE - APPLIED TO SUPPLY AIR DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	



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EMSL Canada Order 691700798
Customer ID: 55JACQ30L
Customer PO: 123220871.200
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: DM-03A **Lab Sample ID:** 691700798-0008
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Silver	0.0%	100%	None Detected	

Client Sample ID: DM-03B **Lab Sample ID:** 691700798-0009
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Silver	0.0%	100%	None Detected	

Client Sample ID: DM-03C **Lab Sample ID:** 691700798-0010
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Silver	0.0%	100%	None Detected	

Client Sample ID: DM-04A **Lab Sample ID:** 691700798-0011
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Clear	0%	100%	None Detected	

Client Sample ID: DM-04B **Lab Sample ID:** 691700798-0012
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Clear	0.0%	100%	None Detected	

Client Sample ID: DM-04C **Lab Sample ID:** 691700798-0013
Sample Description: ROOF - APPLIED TO FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Clear	0.0%	100%	None Detected	

Client Sample ID: RS-01A **Lab Sample ID:** 691700798-0014
Sample Description: ROOF - APPLIED TO THE BASE OF FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Gray	0%	100%	None Detected	

Client Sample ID: RS-01B **Lab Sample ID:** 691700798-0015
Sample Description: ROOF - APPLIED TO THE BASE OF FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Gray	0%	100%	None Detected	



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Customer ID: 55JACQ30L
Customer PO: 123220871.200
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: RS-01C **Lab Sample ID:** 691700798-0016
Sample Description: ROOF - APPLIED TO THE BASE OF FUME HOOD EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray/Black	0.0%	100%	None Detected	

Client Sample ID: FS-01A **Lab Sample ID:** 691700798-0017
Sample Description: MECHANICAL MEZZANINE - APPLIED TO WALL PENETRATION FOR FUME HOOD 30 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01B **Lab Sample ID:** 691700798-0018
Sample Description: MECHANICAL MEZZANINE - APPLIED TO WALL PENETRATION FOR FUME HOOD 30 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-01C **Lab Sample ID:** 691700798-0019
Sample Description: MECHANICAL MEZZANINE - APPLIED TO WALL PENETRATION FOR FUME HOOD 30 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02A **Lab Sample ID:** 691700798-0020
Sample Description: MECHANICAL MEZZANINE - APPLIED TO FLOOR PENETRATION FOR FUME HOOD 27 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02B **Lab Sample ID:** 691700798-0021
Sample Description: MECHANICAL MEZZANINE - APPLIED TO FLOOR PENETRATION FOR FUME HOOD 27 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-02C **Lab Sample ID:** 691700798-0022
Sample Description: MECHANICAL MEZZANINE - APPLIED TO FLOOR PENETRATION FOR FUME HOOD 27 EXHAUST DUCTING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FS-03A **Lab Sample ID:** 691700798-0023
Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR SPRINKLER SYSTEM PIPING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Red	0.0%	100%	None Detected	



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Customer ID: 55JACQ30L
Customer PO: 123220871.200
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: FS-03B **Lab Sample ID:** 691700798-0024

Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR SPRINKLER SYSTEM PIPING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Red	0%	100%	None Detected	

Client Sample ID: FS-03C **Lab Sample ID:** 691700798-0025

Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR SPRINKLER SYSTEM PIPING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Red	0%	100%	None Detected	

Client Sample ID: FS-04A **Lab Sample ID:** 691700798-0026

Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR ELECTRICAL CONDUIT

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Orange	0.0%	100%	None Detected	

Client Sample ID: FS-04B **Lab Sample ID:** 691700798-0027

Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR ELECTRICAL CONDUIT

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Orange	0.0%	100%	None Detected	

Client Sample ID: FS-04C **Lab Sample ID:** 691700798-0028

Sample Description: MAIN ELECTRICAL ROOM - APPLIED TO WALL PENETRATION FOR ELECTRICAL CONDUIT

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Orange	0.0%	100%	None Detected	

Client Sample ID: FM-01A **Lab Sample ID:** 691700798-0029

Sample Description: ROOF - APPLIED TO SEAMS OF ROOF FLASHING AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FM-01B **Lab Sample ID:** 691700798-0030

Sample Description: ROOF - APPLIED TO SEAMS OF ROOF FLASHING AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: FM-01C **Lab Sample ID:** 691700798-0031

Sample Description: ROOF - APPLIED TO SEAMS OF ROOF FLASHING AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	



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EMSL Canada Order 691700798
Customer ID: 55JACQ30L
Customer PO: 123220871.200
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: CFS-01A **Lab Sample ID:** 691700798-0032
Sample Description: MECHANICAL MEZZANINE - APPLIED TO THE FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: CFS-01B **Lab Sample ID:** 691700798-0033
Sample Description: MECHANICAL MEZZANINE - APPLIED TO THE FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: CFS-01C **Lab Sample ID:** 691700798-0034
Sample Description: MECHANICAL MEZZANINE - APPLIED TO THE FLOOR

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Blue/Beige	0%	100%	None Detected	

Client Sample ID: DJC-01A **Lab Sample ID:** 691700798-0035
Sample Description: MECHANICAL MEZZANINE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	White	0%	100%	None Detected	

Client Sample ID: DJC-01B **Lab Sample ID:** 691700798-0036
Sample Description: MECHANICAL MEZZANINE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	White	0%	100%	None Detected	

Client Sample ID: DJC-01C **Lab Sample ID:** 691700798-0037
Sample Description: MECHANICAL MEZZANINE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	White	0%	100%	None Detected	

Client Sample ID: DJC-01D **Lab Sample ID:** 691700798-0038
Sample Description: MAIN FLOOR - FIELD LAB B115 ABOVE THE SUSPENDED CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	White	0%	100%	None Detected	

Client Sample ID: DJC-01E **Lab Sample ID:** 691700798-0039
Sample Description: MAIN FLOOR - CORRIDOR B101 ABOVE THE SUSPENDED CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	White	0%	100%	None Detected	



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Customer ID: 55JACQ30L
Customer PO: 123220871.200
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: RM-01A **Lab Sample ID:** 691700798-0040
Sample Description: ROOF - AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Black	0.0%	100%	None Detected	

Client Sample ID: RM-01B **Lab Sample ID:** 691700798-0041
Sample Description: ROOF - AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	5/04/2017	Black	0.0%	100%	None Detected	

Client Sample ID: RM-01C **Lab Sample ID:** 691700798-0042
Sample Description: ROOF - AROUND FUME HOOD EXHAUST MANIFOLD

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	5/04/2017	Black	10%	90%	None Detected	

Analyst(s):
Kathleen Cruz PLM (13)
PLM Grav. Reduction (29)

Reviewed and approved by: 
Nicole Yeo, 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 of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Burnaby, BC

Initial report from: 05/04/2017 11:55:33

**EMSL Canada Inc.**

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EMSL Canada Or	551704546
CustomerID:	55JACQ30L
CustomerPO:	123220871.200
ProjectID:	

Attn: **Keith Irwin**
Stantec Consulting, Ltd.
500 - 4730 Kingsway
Burnaby, BC V5H 0C6

Phone: (604) 412-3004
 Fax:
 Received: 04/27/17 10:57 AM
 Collected:

Project: 123220871.200

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

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
P-01 Site: Red on Steel- Structural Steel Beams Throughout	551704546-0001	5/1/2017		1900 ppm
P-02 Site: Green on Steel- Structural Steel Bracing & Columns Throughout the Mechanical Mezzanine	551704546-0002	5/1/2017		450 ppm
P-03 Site: Yellow on Steel- Structural Steel Beams, Bracing & Columns Throughout the Mechanical Mezzanine	551704546-0003	5/1/2017		5600 ppm
P-04 Site: Green on Sealed Concrete- Floor Throughout the Mechanical Mezzanine	551704546-0004	5/1/2017		<90 ppm
P-05 Site: Grey on Drywall- Walls Throughout the Mechanical Mezzanine	551704546-0005	5/1/2017		<90 ppm
P-06 Site: Green on Steel/ Aluminum- On Steel Exhaust Manifold Frame & Roof Flashing on the Roof	551704546-0006	5/1/2017		1100 ppm
P-07 Site: Cream on Particle Board/ Aluminum- On Fume Hoods Throughout Insufficient sample to reach reporting limit.	551704546-0007	5/1/2017		<740 ppm

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 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. 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. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that 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 A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 05/04/2017 08:43:07

F.H. Tag #26 – Solvent fume hood in B117

Used for conducting ultra clean dissections and tissue preparation as well as final cleaning of dissection tools

Tissue preparation can take weeks to months depending on the program

Storage of solvents for equipment cleaning and sample preservation

Solvent washing glassware and equipment – during times of high lab usage (ie. Busy field seasons) – acetone, hexane, dichloromethane

F.H. Tag #27 – Solvent fume hood in B116

Used for final cleaning field equipment and glassware prior to sampling

Conducting experiments with samples suspected to be low levels of contamination – experiments can last hours to days

Storage of solvents for equipment cleaning and sample preservation

Solvent washing glassware and equipment – used weekly to monthly for this, depending on the season

Acetone, hexane, dichloromethane

Occasionally – sodium hydroxide solutions mixed/stored/used here as well

F.H. Tag #28 – Acid fume hood in B116

Used for final cleaning field equipment and glassware prior to sampling

Conducting experiments with samples suspected to be low levels of contamination – experiments can last hours to days

Storage of acids and acid solutions, both dilute and concentrated

Acid washing of sampling equipment – used weekly to monthly for this, depending on the season – sulfuric, nitric, and hydrochloric acids

F.H. Tag #29 – Acid fume hood in B115

Used for cleaning highly contaminated field equipment and glassware returning from field use

Conducting experiments with samples suspected to be highly contaminated– experiments can last hours to days

Chemical and glassware storage

Used for equipment cleaning/drying seasonally – during times of high lab usage (ie. Busy field seasons)

F.H. Tag # 30 – Solvent fume hood in B115

Used for cleaning highly contaminated field equipment and glassware returning from field use

Conducting experiments with samples suspected to be highly contaminated – experiments can last hours to days

Formalin – filling/transferring usual seasonal use (fall) ~ 1hr everyday for 1 month

Ethanol – filling/transferring usual seasonal use (fall) ~ 1hr everyday for 1 month

Vacuum pump is used in here to capture exhaust fumes – used ~1 per month for full day

F.H. Tag #31 – Acid fume hood in B114

Storage of acid solutions (usually dilute) for washing sampling equipment.

Acid washing of sampling equipment – used about once per month for this purpose. Nitric acid, hydrochloric acid

F.H. Tag # 32 – Acid fume hood in B113

Primarily used for storage of samples in ethanol or formalin

Some solvent storage/solvent washing of sampling equipment also occurs in this fume hood (though it is an acid fume hood, no acids are present) - hexanes