

Public Service and Procurement Canada
2720 Riverside Drive
Ottawa, Ontario, K1A 0S5

September 7, 2016

Attention: El Houcine Faouzi, Environmental Analyst

Subject: Project-Specific Designated Substances Survey
Window and Bronze Door Repair Project
Supreme Court of Canada
301 Wellington Street, Ottawa, Ontario

DST File No.: GV-OT-026933

PSPC SOA No: EN438-140932/001/FK

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by Public Service and Procurement Canada (PSPC) to prepare a project-specific Designated Substance Report (DSR) for the Window and Bronze Door Repair Project, scheduled to be completed at the Supreme Court of Canada Building, located at 301 Wellington Street, Ottawa, Ontario.

The Designated Substances Report is required under the *Ontario Occupational Health and Safety Act* in order to identify designated substances that may be present within the project areas. The *Canada Labour Code* also stipulates under *Part II, Section 124* that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. By having a DSR conducted, the Project Manager will be able to inform his or her employees, contractors, and building tenants of any designated substances that may be present and possibly disturbed throughout the duration of the project.

DST staff completed a visual inspection of building materials for the presence of suspected designated substances and hazardous materials in the project areas on August 4 and 5, 2016.

2.0 SCOPE OF WORK

The survey implemented by DST included the 11 designated substances listed in Section 30 of the *Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1*. Designated Substances, as identified under the Ontario Occupational Health and Safety Act, are as follows:

- Acrylonitrile;
- Arsenic;
- Asbestos;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Lead;

- Mercury;
- Silica; and
- Vinyl Chloride.

Other Hazardous Materials that are not classified as Designated Substances, but were included as part of the survey and considered pertinent due to applicable regulations, best practice guidelines and/or potential risks to human health and/or the environment, are:

- Polychlorinated Biphenyls (PCBs);
- Halocarbons;
- Mould; and
- Other hazardous materials, as deemed pertinent.

3.0 METHODOLOGY

The purpose of the survey program was to identify designated substances and hazardous materials that may be disturbed during future work operations. The survey was limited to the exterior windows and bronze doors associated with the building, as per drawings provided to DST by PSPC.¹ The survey did not include an assessment of the dormer windows or roof. No other areas of the building were included as part of the survey.

Materials suspected of containing designated substances were visually identified, based on the surveyor's knowledge of the historical composition of building products. Visual identification of materials suspected to contain asbestos or lead (in paint and mortar) was supported by the collection and analysis of a limited number of representative samples, where applicable. Materials suspected of containing designated substances other than asbestos or lead (in paint) were identified by appearance, age, and knowledge of historical applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5 per cent (%) by dry weight, as per *Ontario Regulation (O. Reg.) 278/05 Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1)*, as amended. ACMs can be divided into two categories: friable and non-friable material. A friable ACM is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when cut or shaped. Common non-friable ACMs include vinyl floor products, caulking applications, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed.

¹ Window Locations and Types, Drawings SK-1 to SK-8. Supreme Court of Canada, Ottawa, Ontario, Window Investigation and Report. Prepared by Public Works and Government Services Canada. June 2002.

Representative bulk samples of suspected ACMs were collected by DST during the site investigation. Samples were collected in order to meet the bulk sampling requirements stipulated in *O.Reg. 278/05, as amended*. Bulk samples were submitted to and analyzed by Paracel Laboratories Ltd. (Paracel). Paracel is an accredited laboratory through the Canadian Association for Laboratory Accreditation (CALA) and the National Voluntary Laboratory Accreditation Program (NVLAP). The bulk samples were analyzed using polarised light microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario.

In Canada, the Federal Hazardous Product Act has set the allowable concentration of lead in paints for new consumer products to 0.009% lead content by weight (90 ppm). For the purposes of this survey and report, paints and mortars having detectable concentrations of lead are considered to be lead-containing.

Representative lead paint and mortar samples were collected and submitted by DST for lead content analysis. The samples were analyzed at Paracel. Paracel is certified by the Canadian Association of Laboratory Accreditation (CALA) to perform lead in paint sample analysis. The sample was analysed by Paracel using Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES) in accordance with MOE E3470, ICP-OES.

Select photographs are attached in Appendix A. Laboratory certificates of analysis are attached in Appendix B.

4.0 FINDINGS

The following sections outline the complete findings of all accessible designated substances and hazardous building materials that were assessed within the project areas.

4.1. Asbestos

Table 1 below presents the findings of bulk asbestos material samples collected from and applicable to the project areas by DST, based on visual observations at the time of the site survey.

Table 1: Summary of Bulk Samples Analyzed for Asbestos Content by Polarized Light Microscopy (PLM)			
Sample I.D.	Sample Location	Sample Description	Asbestos Content and Type
26933-01A	East Elevation, Window JJ, Interior Window	White putty between glass and metal frame	None Detected
26933-01B			None Detected
26933-01C			None Detected
26933-02A	East Elevation, Window JJ,	Black caulking between metal frame and exterior stone	None Detected
26933-02B			None Detected
26933-02C			None Detected

Table 1: Summary of Bulk Samples Analyzed for Asbestos Content by Polarized Light Microscopy (PLM)			
Sample I.D.	Sample Location	Sample Description	Asbestos Content and Type
26933-03A	South Elevation, Window JJ	Grey/Black caulking between screen and metal frame	None Detected
26933-03B			None Detected
26933-03C			None Detected
26933-04A	East Elevation, G Window	Caulking, painted brown, between metal frame and stone	None Detected
26933-04B			None Detected
26933-04C			None Detected
26933-05A	East Elevation, G Window	Black putty, between metal frame components and glass	2.81% Chrysotile
26933-05B			Not Analyzed, Positive Stop
26933-05C			Not Analyzed, Positive Stop
26933-06A	East Elevation, A Window	Black caulking, between metal frame and stone	None Detected
26933-06B			None Detected
26933-06C			None Detected
26933-07A	North elevation, F Window	White putty, Between metal frame components and glass	0.91% Chrysotile
26933-07B			Not Analyzed, Positive Stop
26933-07C			Not Analyzed, Positive Stop
26933-08A	West Courtyard, O Window	Caulking, painted brown, between metal frame and metal frame (in groove)	None Detected
26933-08B			None Detected
26933-08C			None Detected
26933-09A	East Courtyard, E Window	Black caulking between inner window and outer window on marble moulding	None Detected
26933-09B			None Detected
26933-09C			None Detected
26933-010A	East Courtyard, E Window	Grey caulking between metal frame and masonry (interior side of window)	None Detected
26933-010B			None Detected
26933-010C			None Detected
26933-11A	South elevation, bronze door	Black caulking around door frame	None Detected
26933-11B			None Detected
26933-11C			None Detected

Table 1: Summary of Bulk Samples Analyzed for Asbestos Content by Polarized Light Microscopy (PLM)			
Sample I.D.	Sample Location	Sample Description	Asbestos Content and Type
26933-12A	East Elevation	Exterior stone mortar	None Detected
26933-12B	North Elevation		None Detected
26933-12C	West Elevation		None Detected
26933-12D	West Elevation		None Detected
26933-12E	West Elevation		None Detected
26933-12F	East Elevation		None Detected
26933-12G	South elevation		None Detected
26933-13A	North elevation, bronze door	Grey caulking around door frame	None Detected
26933-13B			None Detected
26933-13C			None Detected

Select representative photographs of the above noted samples are provided in Appendix A for reference.

Asbestos-Containing Materials

Based on bulk sampling and laboratory analysis, the following materials contain regulated amounts of asbestos:

- Non-friable black and white window putty, generally observed between and beneath the metal frame components and the window glass. Black and white window putty was confirmed by laboratory to contain 2.81% and 0.91% Chrysotile asbestos, respectively (Samples 26933-05A and 26933-07A). Based on visual observations of all the different types of windows, all building window types should be assumed to be comprised of asbestos-containing window putty between and beneath the metal frame components and glass of each respective window throughout the building, unless proven otherwise by bulk sampling and laboratory analysis.

Non Asbestos-Containing Materials

Bulk sampling and laboratory analysis has determined that the following materials do not contain regulated amounts of asbestos:

- White window putty associated with the JJ Window, East elevation, inner window (Samples 26933-01A-C). However, based on the confirmed presence of asbestos in window putty materials denoted above, all window putty associated with all windows shall be considered asbestos-containing.
- Black caulking between the window frame and stone, JJ Window, East Elevation (Samples 26933-02A-C);
- Grey/black caulking between screen and metal frame, JJ Window, East Elevation (Samples 26933-03A-C);

- Brown painted caulking, between metal frame and stone, G Window, East Elevation (Samples 26933-04A-C);
- Black caulking, between metal frame and stone, A Window, East Elevation (Samples 26933-06A-C);
- Caulking, painted brown, between metal frame and metal frame, in window groove, O Window, West Courtyard (Samples 26933-08A-C);
- Black caulking between inner window and outer window on marble transition piece, E Window, East Courtyard (26933-09A-C);
- Grey caulking between metal frame and window, interior side, E Window, East Courtyard (Samples 26933-010A-C);
- Black caulking around the door frames associated with the south elevation bronze doors and west elevation bronze door (Samples 26933-11A-C);
- Exterior stone mortar (Samples 26933-12A-G);
- Grey caulking around the door frame associated with the north elevation bronze doors (Samples 26933-13A-C).
- Caulking materials homogeneous to the above noted samples were identified at the various building window types throughout the building. Based on the above noted laboratory results, caulking materials visually homogeneous to the above noted materials in this section are considered non-asbestos-containing.

4.2. Lead

Table 2 below presents the findings of bulk lead (in paint and mortar) samples collected from and applicable to the project areas, based on visual observations at the time of the site survey.

Table 2: Summary of Bulk Paint and Mortar Samples Analyzed for Lead Content Analysis by Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES)			
Sample I.D.	Sample Location	Sample Description	Lead Content (ppm or µg/g)
26933-Pb01	North Elevation, Window D-D	Brown paint on frame	921
26933-Pb02	Window JJ, East Elevation	Brown paint on frame	707
26933-Pb03	West Elevation	Exterior stone mortar	8.5

Note: **Bold** items exceed the 90 ppm limit for lead, as per *Canada Consumer Product Safety Act's Surface Coating Materials Regulations SOR/2005-109* (as amended).

Based on the analytical results outlined in Table 2 the following paints contain concentrations of lead greater than the Federal Canada Consumer Product Safety Act's limit of 90 ppm:

- Brown paint collected from Window D-D, North Elevation, contains 921 ppm lead (Sample 26933-Pb01);
- Brown paint collected from Window JJ, East Elevation, contains 707 ppm lead (Sample 26933-Pb02).

No other lead paint samples were collected by DST for lead content analysis, as other paints and surface coatings encountered in the project areas were in good condition and sampling without matrix interference (i.e. removing the paint without the substrate material) would have proved difficult. All other paints and surface coatings shall be assumed to contain detectable concentrations of lead, unless specific bulk sampling and laboratory analysis confirms otherwise.

Based on the analytical results outlined in Table 2, the following mortar contains detectable concentrations of lead, but at a lead concentration significantly less than the Federal Canada Consumer Product Safety Act's limit of 90 ppm for surface coatings:

- Exterior stone mortar contains 8.5 ppm lead (Sample 26442-Pb07)

4.3. Silica

Based on the historical composition of building materials, silica is expected to be present in:

- Stone and mortar materials.

4.4. Other Designated Substances and Hazardous Materials

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present, in forms or quantities expected to have an impact on future work operations associated with the Windows and Bronze Doors Repair Project, Supreme Court of Canada, 301 Wellington Street, Ottawa, Ontario:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Mercury;
- Vinyl Chloride;
- PCBs;
- Halocarbons;
- Mould;
- Other Hazardous materials (as deemed pertinent).

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the site investigation, sampling and analysis, the following Designated Substances are present in forms and quantities expected to have an impact on future work operations associated with the Windows and Bronze Doors Repair Project, Supreme Court of Canada, 301 Wellington Street, Ottawa, Ontario:

- Asbestos;
- Lead; and
- Silica.

DST's recommendations for each material, which are based upon both regulatory compliance and best practice guidelines, are included in the following sections below.

5.1. Asbestos

The disturbance of ACMs on construction and demolition projects in the province of Ontario is governed by *O.Reg 278/05*, as amended. This regulation classifies all asbestos disturbances as Low Risk (Type 1), Moderate Risk (Type 2), or High Risk (Type 3), each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MoL) must be notified of any project involving removal of more than a minor amount (e.g. typically 1 square metre) of friable asbestos material.

The transport and disposal of asbestos waste is governed by *O. Reg 347/90 – General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in appropriately labelled, double containers resistant to puncture and tears. The waste must be disposed at a licensed waste disposal site.

The time weight average exposure limit (TWael) for airborne asbestos is prescribed by Ontario Regulation 490/09 Designated Substances, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne asbestos levels that exceed this TWael.

Type 1 work procedures can be used for the removal of non-friable ACMs (e.g. window putty), provided that the material can be wetted and removed using only non-powered hand tools. If these conditions cannot be met, then more stringent (e.g., Type 2 or Type 3) procedures are necessary.

The following recommendations apply to ACMs and suspected ACMs:

- Appropriate work procedures and precautionary measures must be used, as outlined in *O.Reg. 278/05*, as amended, when performing work that may disturb ACMs or suspected ACMs, including prior to building demolition.

- Disturbance and/or removal of ACMs must be appropriately recorded as part of the building's Asbestos Management Plan.
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in *O. Reg. 278/05*, as amended.
- Disposal of asbestos waste is controlled by the Ontario Environmental Protection Act, *Regulation 347/90, General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in double containers resistant to puncture and tears, and appropriately labelled. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the site representative prior to transportation of waste. The transport of the waste to the disposal site is controlled by the federal *Transportation of Dangerous Goods Act, 1992* (TDGA).

Should any previously unidentified suspect ACMs be encountered as part of future work, these materials are to be treated as ACMs and handled accordingly, unless sampling proves otherwise. Materials that have not been analyzed, but are visibly similar to other materials identified as asbestos-containing, must be considered asbestos-containing unless proven otherwise by laboratory analysis.

5.2. Lead

The Occupational Health and Safety Branch (OHS) of the Ontario MoL have published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbances as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work, and assigns different levels of respiratory protection and work procedures for each classification. Disturbance of lead-containing coatings shall follow the procedures of this guideline document.

Although the Canada Consumer Product Safety Act's *Surface Coating Materials Regulations SOR/2005-109*, as amended, has set a limit of 90 parts per million (ppm) for surface coating materials, there may be a potential for exposure to high levels of airborne lead depending on the work activities performed that disturb the lead-containing materials, even at low lead content concentrations. Conducting a risk assessment to assess the potential for exposure to lead should be performed to determine the need to follow work procedures such as those in the MoL guideline referenced above.

For the purposes of this project, all paints/surface coatings in the project area are considered to be lead-containing. The time weighted average exposure limit (TWael) for airborne lead is prescribed by *Ontario Regulation 490/09 Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed this TWael.

The disposal of construction waste containing lead is governed by *O. Reg. 347/90 - General – Waste Management*, as amended. The transport of the waste to the disposal site is controlled by the federal TDGA.

5.3. Silica

The Occupational Health and Safety Branch of the Ontario MoL have published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbances as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. This guideline should be followed during disturbance of silica-containing materials. As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure.

The TWAEL for airborne silica is prescribed by *Ontario Regulation 490/09 Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne silica levels that exceed this exposure limit.

6.0 CLOSURE

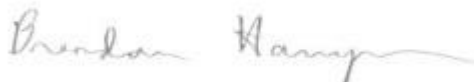
A Limitations of Report section, which forms an integral part of this report, is attached.

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

DST CONSULTING ENGINEERS INC.



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Brendan Harrigan, P.Eng.
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LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos and lead (in paint, mortar) bulk sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. If either the condition of the building or the health of the occupants changes in the future with respect to potential indoor air quality issues, the case should be reviewed and appropriate measures taken.

Mould growth may occur anywhere within a building at any time, should conditions be favorable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favorable to mould incubation and growth (warm, dry, and clean).

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other consultant, sub-contractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

APPENDIX A

Select Photographs

Bulk Asbestos Sample Photo Log










Photo:			
Sample ID:	26933-01A-C	26933-02A-C	26933-03A-C
Photo:			
Sample ID:	26933-04A-C	26933-05A-C	26933-07A-C
Photo:			
Sample ID:	26933-08A-C	26933-09A-C	26933-10A-C

Photo:			
Sample ID:	26933-11A-C	26933-12A-G	26933-13A-C

Additional Photos



Photo 1: Typical example of asbestos-containing window putty, installed between the metal frame components and the glass (F Window, South Elevation pictured).



Photo 2: Typical example of asbestos-containing window putty installed between metal frame components and the glass (Window D-D, South Elevation pictured)



Photo 3: Typical example of asbestos-containing window putty installed between metal frame components and the glass (Window O, West Courtyard pictured).



Photo 4: Typical brown painted window components contain 707 to 921 ppm lead



Photo 5: Supreme Court of Canada, South Elevation



Photo 6: Supreme Court of Canada, East Elevation



Photo 7: Supreme Court of Canada, North Elevation



Photo 8: Supreme Court of Canada, West Elevation

APPENDIX B

Laboratory Certificate of Analysis – Bulk Asbestos and Lead

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Kyle Thompson

Client PO:
Project: GV OT 026933
Custody:

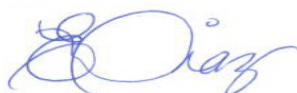
Report Date: 17-Aug-2016
Order Date: 11-Aug-2016

Order #: 1633343

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID		
1633343-01	26933- 01A	1633343-27	26933- 09C
1633343-02	26933- 01B	1633343-28	26933-010A
1633343-03	26933- 01C	1633343-29	26933-010B
1633343-04	26933- 02A	1633343-30	26933-010C
1633343-05	26933- 02B	1633343-31	26933-11A
1633343-06	26933- 02C	1633343-32	26933-11B
1633343-07	26933- 03A	1633343-33	26933-11C
1633343-08	26933- 03B	1633343-34	26933-12A
1633343-09	26933- 03C	1633343-35	26933-12B
1633343-10	26933- 04A	1633343-36	26933-12C
1633343-11	26933- 04B	1633343-37	26933-12D
1633343-12	26933- 04C	1633343-38	26933-12E
1633343-13	26933- 05A	1633343-39	26933-12F
1633343-14	26933- 05B	1633343-40	26933-12G
1633343-15	26933- 05C	1633343-41	26933-13A
1633343-16	26933- 06A	1633343-42	26933-13B
1633343-17	26933- 06B	1633343-43	26933-13C
1633343-18	26933- 06C		
1633343-19	26933- 07A		
1633343-20	26933- 07B		
1633343-21	26933- 07C		
1633343-22	26933- 08A		
1633343-23	26933- 08B		
1633343-24	26933- 08C		
1633343-25	26933- 09A		
1633343-26	26933- 09B		

Approved By:



Emma Diaz
Senior Analyst

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Asbestos, PLM Visual Estimation **MDL - 0.5%**

<i>Paracel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1633343-01	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 01A [AS-PRE]	
						Cellulose	5
						Non-Fibers	95
1633343-02	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 01B [AS-PRE]	
						Cellulose	1
						Non-Fibers	99
1633343-03	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 01C [AS-PRE]	
						Non-Fibers	100
1633343-04	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933- 02A [AS-PRE]	
						Non-Fibers	100
1633343-05	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933- 02B [AS-PRE]	
						Non-Fibers	100
1633343-06	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933- 02C [AS-PRE]	
						Non-Fibers	100
1633343-07	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 03A [AS-PRE]	
						Non-Fibers	100
1633343-08	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 03B [AS-PRE]	
						Non-Fibers	100
1633343-09	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 03C [AS-PRE]	
						Non-Fibers	100
1633343-10	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 04A [AS-PRE]	
						Non-Fibers	100
1633343-11	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 04B [AS-PRE]	
						Non-Fibers	100
1633343-12	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 04C [AS-PRE]	
						Non-Fibers	100
1633343-13	05-Aug-16	sample homogenized	Black	Caulking	Yes	Client ID: 26933- 05A [AS-PRE]	
						Chrysotile	2.81
						Non-Fibers	97.19
1633343-14	05-Aug-16					Client ID: 26933- 05B	
						not analyzed	
1633343-15	05-Aug-16					Client ID: 26933- 05C	
						not analyzed	
1633343-16	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 06A [AS-PRE]	
						Non-Fibers	100

Certificate of Analysis

Client: **DST Consulting Engineers Inc. (Ottawa)**

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: **GV OT 026933**

Asbestos, PLM Visual Estimation **MDL - 0.5%**

<i>Paracel I.D.</i>	<i>Sample Date</i>	<i>Layers Analyzed</i>	<i>Colour</i>	<i>Description</i>	<i>Asbestos Detected:</i>	<i>Material Identification</i>	<i>% Content</i>
1633343-17	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 06B [AS-PRE] Non-Fibers	100
1633343-18	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933- 06C [AS-PRE] Non-Fibers	100
1633343-19	05-Aug-16	sample homogenized	White/Grey/Brown	Debris	Yes	Client ID: 26933- 07A [AS-PRE] Chrysotile Non-Fibers	0.91 99.09
1633343-20	05-Aug-16					Client ID: 26933- 07B not analyzed	
1633343-21	05-Aug-16					Client ID: 26933- 07C not analyzed	
1633343-22	05-Aug-16	sample homogenized	Brown	Caulking	No	Client ID: 26933- 08A [AS-PRE] Non-Fibers	100
1633343-23	05-Aug-16	sample homogenized	Brown	Caulking	No	Client ID: 26933- 08B [AS-PRE] Non-Fibers	100
1633343-24	05-Aug-16	sample homogenized	Brown	Caulking	No	Client ID: 26933- 08C [AS-PRE] Non-Fibers	100
1633343-25	05-Aug-16	sample homogenized	Grey/Brown	Caulking	No	Client ID: 26933- 09A [AS-PRE] Non-Fibers	100
1633343-26	05-Aug-16	sample homogenized	Grey/Brown	Caulking	No	Client ID: 26933- 09B [AS-PRE] Non-Fibers	100
1633343-27	05-Aug-16	sample homogenized	Grey/Brown	Caulking	No	Client ID: 26933- 09C [AS-PRE] Non-Fibers	100
1633343-28	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-010A [AS-PRE] Non-Fibers	100
1633343-29	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-010B [AS-PRE] Non-Fibers	100
1633343-30	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-010C [AS-PRE] Non-Fibers	100
1633343-31	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933-11A [AS-PRE] Non-Fibers	100
1633343-32	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933-11B [AS-PRE] Non-Fibers	100
1633343-33	05-Aug-16	sample homogenized	Black	Caulking	No	Client ID: 26933-11C [AS-PRE] Non-Fibers	100

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1633343-34	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12A Non-Fibers	100
1633343-35	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12B Non-Fibers	100
1633343-36	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12C Non-Fibers	100
1633343-37	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12D Non-Fibers	100
1633343-38	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12E Non-Fibers Other fibers	99 1
1633343-39	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12F Non-Fibers	100
1633343-40	05-Aug-16	sample homogenized	Grey	Mortar	No	Client ID: 26933-12G Non-Fibers	100
1633343-41	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-13A Non-Fibers	[AS-PRE] 100
1633343-42	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-13B Non-Fibers	[AS-PRE] 100
1633343-43	05-Aug-16	sample homogenized	Grey	Caulking	No	Client ID: 26933-13C Non-Fibers	[AS-PRE] 100

**** Analytes in bold indicate asbestos mineral content.**

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code	*	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	Ottawa West Lab	200812-0		12-Aug-16

* Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Certificate of Analysis

Report Date: 17-Aug-2016

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 11-Aug-2016

Client PO:

Project Description: GV OT 026933

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Work Order Revisions / Comments*None*



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300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page 1 of 1

Client Name: DST
Contact Name: Kyla Thompson
Address: 2150 Thurf. Dr.
Telephone: 613-748-1415
Project Reference: GV-07-026433
Quote #:
PO #:
Email Address: kthompson@dstgroup.com

Turnaround Time:

☐ Immediate ☐ 1 Day
☐ 4 Hour ☐ 2 Day
☐ 8 Hour ☐ 3 Day
☒ Regular

Date Required:

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☐ Bulk ☐ Tape Lift ☐ Swab ☐ Other Regulatory Guideline:

Required Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM ☒ PLM ☐ Chatfield ☐ TEM

Paracel Order Number:

1633343

Asbestos - Bulk

Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Matrix Description	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1 26433- 01A-C	Aug 5	N/A	PLM	Caulking	Y	N	
2 02A-C							
3 03A-C							
4 04A-C							
5 05A-C							
6 06A-C							
7 07A-C							
8 08A-C							
9 09A-C							
10 010A-C							
11 11A-C							
12 12A-G				Mortar			
13 13A-C				Caulking			
14							
15							

*Each layer will be analyzed and charged separately **Homogenize = All layers are blended into a single uniform sample.

Comments:

Method of Delivery:

Walk-in

Relinquished By (Sign):

Received at Depot:

Received at Lab:

Verified By:

Relinquished By (Print): Kyla Thompson

Date/Time: Aug 11, 2016 9AM

Date/Time:

Date/Time:

08/11/16 11:34am

Date/Time:

08/11/16 4:13pm

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Kyle Thompson

Client PO:
Project: GV OT 026933
Custody:

Report Date: 16-Aug-2016
Order Date: 11-Aug-2016

Order #: 1633336

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1633336-01	26933-Pb 01
1633336-02	26933-Pb 02

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 16-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	12-Aug-16	15-Aug-16

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 16-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Sample Results

Lead				Matrix: Paint
				Sample Date: 05-Aug-16
Paracel ID	Client ID	Units	MDL	Result
1633336-01	26933-Pb 01	ug/g	20	921
1633336-02	26933-Pb 02	ug/g	20	707

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	20	ug/g						
Matrix Duplicate									
Lead	6620	200	ug/g	5780			13.6	30	
Matrix Spike									
Lead	2780		ug/L	2890	-45.4	70-130			



Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Kyle Thompson

Client PO:
Project: GV OT 026933
Custody:

Report Date: 17-Aug-2016
Order Date: 11-Aug-2016

Order #: 1633337

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID
1633337-01

Client ID
26933-Pb 03

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	15-Aug-16	15-Aug-16
Solids, %	Gravimetric, calculation	13-Aug-16	13-Aug-16

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Client ID:	26933-Pb 03	-	-	-
Sample Date:	05-Aug-16	-	-	-
Sample ID:	1633337-01	-	-	-
MDL/Units	Other	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	100	-	-	-
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Metals

Lead	1.0 ug/g dry	8.5	-	-	-
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Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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Metals

Lead	ND	1.0	ug/g						
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Certificate of Analysis

Report Date: 17-Aug-2016

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 11-Aug-2016

Client PO:

Project Description: GV OT 026933

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	23.0	1.0	ug/g dry	22.9			0.6	30	
Physical Characteristics									
% Solids	74.9	0.1	% by Wt.	77.5			3.4	25	

Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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Metals

Lead	637		ug/L	457	71.9	70-130			
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Certificate of Analysis

Client: DST Consulting Engineers Inc. (Ottawa)

Client PO:

Report Date: 17-Aug-2016

Order Date: 11-Aug-2016

Project Description: GV OT 026933

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

