

Addendum/Addenda

No./N° 1

Project Description / Description de projet M58 Electrical Vault Upgrade		
Solicitation No./ N° de sollicitation 17-22103	Project No./N° de projet 5160	W.O. No./N° d'ordre de travail A1-011392-01
Departmental Representative / Représentant Ministériel Richard Maurice	Date Dec 4,2017	
Notice: This addendum shall form part of the tender documents and all conditions shall apply and be read in conjunction with the original plans and specifications.		Nota: Cet addenda fait partie intégrale des dossiers d'appel d'offres; toutes les conditions énoncées doivent être lues et appliquées en conjonction avec les plans et les devis originaux.

1. E03, delete scope of note 5.
2. Understab conduit from exiting pit below panel PD1 to junction box at room CB04 is estimated to be 25m length.
3. Contractor is responsible for repair of any damages to any exsiting building component caused by construction activities.
4. Designated substance report for electrical room WG25 is attached.



National Research Council
Ottawa, Ontario

November 29, 2016

Attention: Maurice Richard, Project Delivery Coordinator
Via e-mail: Maurice.Richard@nrc-cnrc.gc.ca

RE: Summary Report – Project-Specific Designated Substances Survey
Building M-58, Electrical Room WG-05
National Research Council Campus, 1200 Montreal Road, Ottawa, ON

DST File No.: GV-OT-027905

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by the National Research Council (NRC) to conduct a Project-Specific Designated Substances Survey (DSS) for Electrical Room WG-05, Building M-58, NRC Campus, 1200 Montreal Road, Ottawa, ON, prior to the planned renovation work.

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 area. 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 DSS conducted, NRC will be able to inform his or her employees, contractors, and tenants of any designated substances that may be present and possibly disturbed throughout the planned renovation work.

DST staff completed a visual inspection of building materials for the presence of suspected designated substances and select hazardous materials in the project area on November 14, 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 0.1. Designated Substances, as identified under the Ontario Occupational Health and Safety Act, are as follows:

- Acrylonitrile;
- Arsenic;
- Asbestos-Containing Materials (ACMs) - both friable and non-friable;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Lead;
- Mercury;
- Silica; and
- Vinyl Chloride.

Other Hazardous Materials which 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);
- Mould;
- Ozone-depleting substances; and
- Other hazardous materials, as deemed pertinent.

3.0 METHODOLOGY

The field program for this survey was completed by DST on November 14, 2016. The survey was non-destructive in nature and limited to areas included in the planned renovations in Electrical Room WG-05 of Building M-58. The project area included all wall-mounted electrical equipment, fuse boxes and associated cabling. No other equipment in Room WG-05 or other areas of the building were included as part of this project-specific DSS.

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) 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. Equipment that may contain polychlorinated biphenyls (e.g. electrical transformers and fluorescent light ballasts) can often be identified by examining manufacturer's labels. For safety reasons, DST personnel did not enter electrical transformers to sample transformer oil for PCB content.

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 O. Reg. 278/05, 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.

Nine (9) 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. The 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 NVLAP. All bulk samples were analyzed using a combination of dispersion staining and 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.

With regards to lead in paint, although the Ontario Ministry of Labour (MoL) has published a guideline for control of lead exposures on construction projects in Ontario, it does not include

criteria for the classification of lead-paint. Instead, it uses presumed airborne lead concentrations for specific tasks as criteria for classifying work. However, in regulations set by the United States (U.S.) Department of Housing and Urban Development, lead-based paint is classified as any paint application containing at least 1.0 milligrams of lead per square centimetre of surface area (1.0 mg/cm²), or at least 0.5% lead content by weight [(5,000 parts per million (ppm))]. This criterion was widely, although not universally, used in Canada. In Canada, the Federal Canada Consumer Product Safety Act's *Surface Coating Materials Regulations SOR/2005-109* has lowered the allowable concentration of lead in paints for new consumer products to 0.009% lead content by weight (90 ppm). For the purposes of the survey and this report, paint applications having detectable concentrations of lead are considered to be lead-containing.

One (1) representative bulk sample was collected and submitted by DST for lead content analysis. The samples were analyzed at Paracel Laboratories. 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.

Selected photographs are included in Appendix A. Bulk asbestos and lead analytical results are included in Appendix B.

4.0 FINDINGS

4.1. Asbestos

Based on bulk sampling analytical results and visual observations, the following materials were identified as containing regulated concentrations of asbestos in the project area:

- Non-friable mortar associated with terracotta block, containing 1% Amosite asbestos, observed on walls throughout the project area (DST samples M58-01-A-C).
- 1.5 square metres (total) of non-friable assumed asbestos-containing Transite panels, located inside wall-mounted fuse boxes.

High voltage cables servicing the vault could not be accessed for evaluation. Historically, these cables have been sheathed in asbestos-containing wrap.

Bulk sampling analytical results has confirmed that the following materials do not contain regulated concentrations of asbestos in the project area:

- Spray-on fireproofing, located on the upper ceiling deck, structural beams and as overspray in the project area (DST samples M58 02A-C); and
- White caulking associated with pipe penetrations in the project area (DST samples M58 03A-C).

4.2. Lead

Based on visual observations and bulk sampling analytical results, the following paint finishes were identified as containing detectable concentrations of lead in the project area:

- Grey paint, containing 1,220 parts per million (ppm) of lead, located on the floor throughout the project area (DST sample M58-LP-01).

No further paint samples were collected by DST for lead content analysis during the site investigation, as remaining paints in the project area were in good condition and sampling without matrix interference (i.e. removing the paint without the substrate material) would have proved difficult. As such, all older paint finishes are suspected to contain lead.

No other materials suspected of containing lead were observed in the project area.

4.3. Mercury

Mercury is suspected to be present in the following equipment:

- Fluorescent light fixtures containing fluorescent light tubes were observed. Fluorescent light tubes contain mercury in a vapour form and in the phosphor coating on the lamp tube.

4.4. Silica

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

- Terracotta block and mortar; and
- Concrete materials.

4.5. Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) are hazardous chemicals which were used in the manufacturing of a variety of equipment, such as electrical equipment, heat exchangers, hydraulic systems, and for several other specialized applications. PCBs are commonly found within electrical transformers and electrical cables.

DST did not enter transformers or intrusively examine transformer cabling located in the project area. Cabling suspected of containing PCBs (e.g. oils, sheathing etc.) was observed in the project area.

4.6. 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 that would impact the renovation work:

- Acrylonitrile;
- Arsenic;
- Benzene;
- Coke Oven Emissions;
- Ethylene Oxide;
- Isocyanates;
- Vinyl Chloride;
- Ozone-depleting substances (ODSs); and
- Mould.

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 a measurable impact on Electrical Room renovation project at Building M-58:

- Asbestos;
- Lead;
- Mercury;
- Silica; and
- PCBs.

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 asbestos-containing materials on construction and demolition projects in the province of Ontario is governed by *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. This regulation classifies all asbestos disturbances as either 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 or renovation. The Ontario Ministry of Labour (MOL) must be notified of any project involving removal of more than a minor amount (e.g. typically one square metre) of friable asbestos material.

The removal or disturbance of non-friable asbestos-containing material (terracotta block mortar on walls throughout the project area) can be completed using Type 1 asbestos precautionary measures, provided the material is wetted and only non-powered hand-held tools are used. If these conditions cannot be met, then more stringent (Type 2 or Type 3) procedures are required.

Should high voltage cables require disturbance as part of the project, these cables should be evaluated for the presence of asbestos-containing sheathing.

The time weight average exposure limit (TWAEEL) 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 TWAEEL.

The following recommendations apply to ACMs:

1. In general, materials must be maintained in good condition;
2. The condition of material(s) identified in this report must be inspected at least annually, and this record must be updated accordingly;
3. 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;

4. 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; and
5. Disposal of asbestos waste is controlled by the Ontario Environmental Protection Act, R.R.O., 1990, Regulation 347, *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).

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 of the Ontario MoL has 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. In the absence of specific legislation for lead on construction projects, this guideline should be followed when disturbing lead-containing materials.

Paints containing elevated concentrations of lead can pose a health risk to humans if ingested or inhaled. Such lead paints are also a risk to the environment with the potential to contaminate soil and groundwater. Paints with elevated lead content can also pose a health risk to workers while completing renovations within the building.

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

The 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.

DST recommends that any future disturbance of lead-containing materials avoid operations that generate high levels of dust (e.g. sanding, grinding) and that should these operations be required, appropriate precautionary measures be implemented for worker exposure.

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 *Transportation of Dangerous Goods Act* (TDGA), 1992.

5.3. Mercury

There are no regulations that specifically govern the disturbance of mercury on construction projects. However, the Occupational Health and Safety Division of the Ontario MoL has published *The Safe Handling of Mercury: A Guide for the Construction Industry*. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills. In the absence of specific legislation for mercury on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

When the removal of fluorescent light tubes is required, the tubes should be removed intact from the fixtures. This prevents worker exposure to mercury vapour, particularly if the tube was energized shortly before removal.

The TWael for mercury 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 mercury levels that exceed this exposure limit.

Liquid mercury is classified as a hazardous waste under O. Reg. 347/90, as amended. The transport of the waste to a disposal site is controlled by O. Reg. 347/90 and by the federal TDGA. It is now common practice to recycle fluorescent light tubes and avoiding the generation of hazardous waste.

5.4. Silica

The Occupational Health and Safety Branch of the Ontario Ministry of Labour 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.

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.

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.

5.5. Polychlorinated Biphenyls (PCBs)

Cabling suspected of containing PCBs (e.g. oils, sheathing etc.) was observed in the project area. Should cutting or replacement of cabling be required, appropriate personal protective equipment to mitigate dermal exposure to potential PCB-containing materials or liquids should be utilised by any workers involved in this work as a precautionary measure. Protective equipment would include protective 'Tyvek' overalls, appropriate gloves (e.g. neoprene, viton) and plastic face shields. Any equipment potentially containing PCBs must be handled and disposed of as such.

O. Reg. 347, General – Waste Management, as amended, is regulated under the Environmental Protection Act to regulate the handling, storage and transportation of hazardous substances and waste dangerous goods. The transport of PCB waste to the disposal site is controlled by the federal Transportation of Dangerous Goods Act, 1992. Proper notification must be issued to the

site representative prior to transportation of waste. Use, storage, labelling, and reporting requirements are also outlined within the federal PCB Regulation under the Canadian Environmental Protection Act (CEPA).

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.



Nicolas Strang, C.Tech.
Project Manager
nstrang@dstgroup.com



Matthew DesRoches, CIH, ROH, M.Sc.(A)
Occupational Hygienist
mdesroches@dstgroup.com

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/paint bulk sampling in select representative areas for laboratory analysis. There is a practical limitation on the number of intrusive test cuts that can be made and the number of samples that can be collected in an occupied building. This requires the investigator to extrapolate observations and analytical results between test cut locations. The uncertainty, and inherent risk, associated with this necessity increases with the distance between sampling locations. 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.

Any recommendations and conclusions provided that are based on conditions or assumptions reported herein will inherently include any uncertainty associated with those conditions or assumptions.

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 subcontractor 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



Photo 1: Non-friable asbestos-containing mortar associated with terracotta block throughout the project area. The sprayed fireproofing was confirmed to be non-ACM.



Photo 2: Assumed asbestos-containing Transite panels, located behind wall-mounted fuse boxes in the project area.

APPENDIX B

Laboratory Certificates of Analysis – Asbestos and Lead

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Nicolas Strang

Client PO: NRC Electrical Rooms- M58 Electrical Room WG-05
Project: GV OT 027905
Custody: 17184

Report Date: 21-Nov-2016
Order Date: 15-Nov-2016

Order #: 1647123

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

Paracel ID	Client ID
1647123-01	M58-01A
1647123-02	M58-01B
1647123-03	M58-01C
1647123-04	M58-02A
1647123-05	M58-02B
1647123-06	M58-02C
1647123-07	M58-03A
1647123-08	M58-03B
1647123-09	M58-03C

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

Report Date: 21-Nov-2016

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 15-Nov-2016

Client PO: NRC Electrical Rooms- M58 Electrical Room WG-05

Project Description: GV OT 027905

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

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1647123-01	14-Nov-16	sample homogenized	Grey/White/Green	Plaster/Unknown	No	Client ID: M58-01A [ASLYR] Non-Fibers	100
1647123-02	14-Nov-16	sample homogenized	Grey/White/Green	Plaster/Unknown	No	Client ID: M58-01B [ASLYR] Non-Fibers	100
1647123-03	14-Nov-16	sample homogenized	Grey/White/Green	Plaster/Unknown	Yes	Client ID: M58-01C [ASLYR] Amosite Non-Fibers	1 99
1647123-04	14-Nov-16	sample homogenized	Grey	Insulation	No	Client ID: M58-02A MMVF Non-Fibers	70 30
1647123-05	14-Nov-16	sample homogenized	Grey	Insulation	No	Client ID: M58-02B MMVF Non-Fibers	70 30
1647123-06	14-Nov-16	sample homogenized	Grey	Insulation	No	Client ID: M58-02C MMVF Non-Fibers	70 30
1647123-07	14-Nov-16	sample homogenized	Grey	Parging	No	Client ID: M58-03A MMVF Non-Fibers	1 99
1647123-08	14-Nov-16	sample homogenized	Grey	Parging	No	Client ID: M58-03B MMVF Non-Fibers	1 99
1647123-09	14-Nov-16	sample homogenized	Grey	Parging	No	Client ID: M58-03C MMVF Non-Fibers	1 99

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

** 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	2 - Ottawa West Lab	200812-0	21-Nov-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: 21-Nov-2016

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 15-Nov-2016

Client PO: NRC Electrical Rooms- M58 Electrical Room WG-05

Project Description: GV OT 027905

Qualifier Notes

Sample Qualifiers :

ASLYR: Layers were noted for this sample, however, the entire sample was homogenized per client request.

Work Order Revisions / Comments

None



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

Chain of Custody
(Lab Use Only)
No 17184
Page 1 of 1

Client Name: DST Consulting Engineers Project Reference: NRC Electrical Rooms - M58
 Contact Name: Nick Strang Quote #: Electrical Room WG-05
 Address: 250 Thurston Dr. PO #: Quote-16-IT
Ottawa, ON PO#: 6V-07-077905
 Telephone: 613-748-1415 Email Address: nstrang@dstgroup.com
acooney@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:		Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk			
<u>1647123</u>					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	<u>M58-01A</u>	<u>Nov 14/16</u>		<u>PLM</u>	<u>Texture (cont/Mortar)</u>	<u>Y</u>	<u>Y</u>	<u>Homogenize</u>
2	<u>01B</u>	↓		↓	↓	↓	↓	↓
3	<u>01C</u>	↓		↓	↓	↓	↓	↓
4		↓		↓	↓	↓	↓	↓
5	<u>M58-02A</u>	↓		↓	<u>Fireproofing</u>	<u>Y</u>	<u>N</u>	↓
6	<u>02B</u>	↓		↓	↓	↓	↓	↓
7	<u>02C</u>	↓		↓	↓	↓	↓	↓
8		↓		↓	↓	↓	↓	↓
9	<u>M58-03A</u>	↓		↓	<u>White Caulking</u>	<u>Y</u>	<u>N</u>	↓
10	<u>03B</u>	↓		↓	↓	↓	↓	↓
11	<u>03C</u>	↓		↓	↓	↓	↓	↓
12		↓		↓	↓	↓	↓	↓
13		↓		↓	↓	↓	↓	↓
14		↓		↓	↓	↓	↓	↓
15		↓		↓	↓	↓	↓	↓

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

Comments: _____ Method of Delivery: Walkin

Relinquished By (Sign): <u>[Signature]</u>	Received at Dept: <u>[Signature]</u>	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>Andrew Cooney</u>	Date/Time: <u>Nov 15/16 11:03a</u>	Date/Time: <u>11/15/16 1:00pm</u>	Date/Time: <u>11/15/16 1:28pm</u>

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Nicolas Strang

Client PO: NNRC Electrical Rooms-1758 Electrical Room WG-05
Project: GV OT 027905
Custody: 33048

Report Date: 17-Nov-2016
Order Date: 15-Nov-2016

Order #: 1647119

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

Parcel ID	Client ID
1647119-01	M58-LP-01

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

Report Date: 17-Nov-2016

Client: DST Consulting Engineers Inc. (Ottawa)

Order Date: 15-Nov-2016

Client PO: NNRC Electrical Rooms-1758 Electrical Room

Project Description: GV OT 027905

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	16-Nov-16	16-Nov-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: NNRC Electrical Rooms-1758 Electrical Room

Report Date: 17-Nov-2016
 Order Date: 15-Nov-2016
 Project Description: GV OT 027905

Sample Results

Lead				Matrix: Paint	
				Sample Date: 14-Nov-16	
Paracel ID	Client ID	Units	MDL	Result	
1647119-01	M58-LP-01	ug/g	20	1220	

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	237	20	ug/g	285			18.5	30	
Matrix Spike									
Lead	370		ug/L	143	91.0	70-130			



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Chain of Custody
(Lab Use Only)

No 33048

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Client Name: <u>DST Consulting Engineers</u>	Project Reference: <u>NRC Electrical Rooms-M58</u>	Turnaround Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> Regular Date Required: _____
Contact Name: <u>Nick Strang</u>	Quote # <u>Electrical Room - W6-05</u>	
Address: <u>2150 Thurston Dr. Ottawa, ON</u>	PO # <u>Quote # 1677</u> <u>PO# 6V-0T-027905</u>	
Telephone: <u>613-748-1415</u>	Email Address: <u>nstrang@dstgroup.com</u> <u>acooney@dstgroup.com</u>	

Criteria: O. Reg. 153/04 (As Amended) Table ___ RSC Filing O. Reg. 558/00 PWQO CCME SUB (Storm) SUB (Sanitary) Municipality: _____ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) <u>P (Paint)</u> A (Air) O (Other)				Required Analyses																	
Paracel Order Number: <u>1647119</u>		Matrix	Air Volume	# of Containers	Sample Taken		Lead														
Sample ID/Location Name					Date	Time															
1	<u>M58-LP-01</u>	<u>P</u>		<u>1</u>	<u>Nov 14/16</u>	<u>2:00pm</u>	<u>X</u>														
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Comments: _____ Method of Delivery: Walki

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>Rachel Subject</u>
Relinquished By (Print): <u>Andrew Cooney</u>	Date/Time:	Date/Time: <u>Nov 15/16</u>	Date/Time: <u>Nov 15/16</u>
Date/Time: <u>Nov 15/16</u>	Temperature: _____ °C	Temperature: _____ °C <u>11:03a</u>	pH Verified <input checked="" type="checkbox"/> By: <u>N/A 12.14</u>

5. Picture of existing cable connection of M58LS2



6. Picture of pit below existing panel PD1, underslab conduits at left side leave for room CB04.

