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## ADDENDUM NO. A03

Project: **CFIA Fallowfield Lab Retrofit  
3851 Fallowfield Road,  
Ottawa, ON  
K2H 8P9**

Project No.: **H0541 (RMA)15181**

Date: **02/11/2016**

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### ADDENDUM

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The following information supplements and/or supersedes the bid documents dated 2015/11/24

This Addendum forms part of the contract documents and is to be read, interpreted, and co-ordinated with all other parts. The cost of all contained herein is to be included in the contract sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above-named project to the extent referenced and shall become part thereof. Acknowledge receipt of this Addendum by inserting its number and date on the Tender Form. Failure to do so may subject the Bidder to disqualification.

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### CLARIFICATIONS

#### 1. GENERAL

##### 1.1. Find attached for reference:

- 1.1.1. *Project Specific DSR A-Wing and C-Wing Renovation Project Building 201 3851 Fallowfield Road Jan 2016* prepared by Greenough Environmental Engineers.

#### 2. SPECIFICATIONS

##### 2.1. ADD Appendix 1:

- 2.1.1. *Type 2 & 3 Asbestos Specification CFIA Building201 Awing and Cwing Feb 8, 2016* prepared by Greenough Environmental Consulting.

#### 3. DRAWINGS

##### 3.1. ADD Key Plans:

- 3.1.1. A307 / C-WING LOBBY DS REMEDIATION  
3.1.2. A308 / C-WING MAIN CORRIDOR DS REMEDIATION  
3.1.3. A309 / A-WING LAB PLAN DS REMEDIATION  
3.1.4. A310 / A-WING LAB RCP DS REMEDIATION

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Remediation Key Plans are for general reference only, to be read in conjunction with *Specifications Appendix A – Designated Substance Remediation*, February, 2016 prepared by Greenough Environmental Consulting.

**4. Attachments**

- 4.1. *Project Specific DSR A-Wing and C-Wing Renovation Project Building 201 3851 Fallowfield Road Jan 2016* prepared by Greenough Environmental Engineers.
- 4.2. *Specifications Appendix A – Designated Substance Remediation*, February, 2016 prepared by Greenough Environmental Consulting.
- 4.3. Key Plans

**END of Addendum No. A03**



**PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY  
A-WING and C-WING RENOVATION PROJECT  
BUILDING 201 – 3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO**

**GEC PROJECT No. 29008**



**GEC PROJECT NO. 29008**

**REPORT TO:**

**MR. BLAIR MURPHY**

**ON:**

**PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY  
A-WING and C-WING RENOVATION PROJECT  
BUILDING 201 – 3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO**

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**JANUARY, 2016**

## EXECUTIVE SUMMARY

Greenough Environmental Consulting Inc. (GEC) was commissioned by the Canadian Food Inspection Agency (CFIA) under the direction of Mr. Blair Murphy, to provide a designated substance report (DSR) for the upcoming A-Wing and C-Wing renovation project within building 201 located at 3851 Fallowfield Road in Ottawa, Ontario.

The purpose of the investigation was to identify the quantity, location, and condition of designated substances located within the proposed project areas.

For the purpose of this survey, GEC made reference to the results obtained within the initial building survey completed by TROW (2003), as well as additional project specific DSRs completed within the building by GEC in recent years.

Based on the visual inspections of the accessible areas conducted during the survey and analytical results, asbestos-containing materials (ACMs) and lead-containing paints have been identified within the project areas. Silica and mercury are assumed present in select building materials. Other designated substances may be present in low concentrations in building materials, paints and adhesives within the project areas but they do not represent a concern to occupational health at this time.

A summary of the designated substance survey results is presented in **Table 1**.

<b>TABLE 1 – SUMMARY OF RESULTS &amp; RECOMMENDATIONS</b>		
<b>PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY</b>		
<b>A-WING and C-WING RENOVATION PROJECT</b>		
<b>BUILDING 201 – 3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO – JANUARY 2016</b>		
<b>Component</b>	<b>Comments</b>	<b>Recommendations</b>
Acrylonitrile	None identified.	No recommendations warranted at this time.
Arsenic	None identified.	No recommendations warranted at this time.

<p>Asbestos</p>	<p>Based on the findings of this survey as well as previous and current analytical results, the following <u>non-friable</u> asbestos-containing material (ACM) has been identified within the project areas.</p> <ul style="list-style-type: none"> <li>• Drywall Joint Compound;</li> <li>• Acoustic Ceiling Tiles.</li> <li>• Brown Duct Sealant</li> </ul> <p>Based on the findings of this survey as well as previous and current analytical results, the following <u>friable</u> asbestos-containing materials (ACMs) have been identified within the project areas.</p> <ul style="list-style-type: none"> <li>• Textured Ceiling/Wall Finish.</li> <li>• Sheet Vinyl Flooring with paper backing</li> </ul>	<p><u>Project Specific Recommendations:</u></p> <ul style="list-style-type: none"> <li>○ Prior to the planned renovations, all Acoustic Ceiling Tiles, Brown Duct Sealant, Sheet Vinyl Flooring, drywall joint compound and textured ceiling/wall finish that will be or has the potential to be disturbed, must be removed in accordance with the procedures outlined in Ontario Regulation 278/05 as well as the PWGSC Policy regarding Asbestos Management.</li> </ul> <p><u>General Recommendations:</u></p> <ul style="list-style-type: none"> <li>○ Suspect materials identified during renovation and/or demolition activities not discussed in this report herein should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.</li> <li>○ That the roles and responsibility of “the owner” as stipulated in Section 8 of Ontario Regulation 278/05 be recognized and adhered to including, but not limited to, notification to occupiers and workers as well as training.</li> <li>○ Ontario Regulation 490/09, as amended to O. Reg. 148/12 - Designated Substance - made under the Occupational Health and Safety Act states that airborne levels of asbestos fibres should not exceed 0.1 f/cc.</li> </ul>
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Benzene	None identified.	No recommendations warranted at this time.
Coke Oven Emissions	None identified.	No recommendations warranted at this time.
Ethylene Oxides	None identified.	No recommendations warranted at this time.
Isocyanates	None identified.	No recommendations warranted at this time.
Lead	<p>Based on the laboratory analysis a minor concentrations of lead (286 - &lt;20µg/g) was detected in the paint finishes sampled.</p> <p>Paint surfaces were generally found to be in good condition with minor localized blistering or peeling observed.</p> <p>Based on the age of the building and historical applications, lead is assumed to be present in solder on joints of copper piping, caulking in bell fittings associated with cast iron drainage pipe joints and used on electrical wiring/systems (where observed within the renovation areas).</p>	<p>In the event that any work is conducted that has the potential to create airborne lead, every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities as outlined in the Ontario Ministry of Labour Guideline - Lead on Construction Projects dated April 2011.</p> <p>Every employer shall also ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air as per O.Reg 490/09, as amended to 148/12.</p> <p>The disposal of construction waste containing lead is controlled by Ontario Regulation 347/90 as amended to O. Reg. 302/14 – General Waste Management, under the Ontario Environmental Protection Act. Leachate tests for lead in construction waste must not exceed 5 mg/L in order to be disposed of at a local landfill without treatment.</p>
Mercury	Mercury vapour is present in	Mercury or mercury vapour within

	<p>fluorescent light tubes identified throughout the survey areas. Additionally, mercury may also be present within thermostats, switches and thermometers (where present).</p> <p>Based on the age of the building and historical applications, mercury is also assumed to be present in painted surfaces; however, sampling of mercury in painted surfaces was not performed for the purpose of this survey.</p>	<p>fluorescent light tubes and other equipment poses no risk to occupants provided the mercury containers remain intact.</p> <p>Best management practice for disposal of mercury-containing light tubes is to participate in the manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling.</p> <p>Exposure to mercury in industrial establishments is regulated under O. Reg. 490/09, amended to O. Reg. 148/12. The TWA should not exceed 0.025 mg/m<sup>3</sup> for all forms except alkyl compounds. Alkyl compounds of mercury should not exceed 0.01 mg/m<sup>3</sup>.</p> <p>All waste material including switches, thermostats and thermometers, must be handled and disposed of according to O. Reg. 347, amended to O. Reg. 302/14. Leachate tests for mercury in construction waste must not exceed 0.1 mg/L in order to be disposed of at a local landfill without treatment.</p>
Silica	<p>Based on the age of the building and historical applications, silica is assumed to be present in gypsum (drywall), drywall joint compound, poured concrete, concrete block and cement mortar identified within the proposed renovation areas (where applicable).</p>	<p>Silica dust can be generated by drilling, coring, blasting, grinding, crushing and sandblasting silica-containing materials.</p> <p>Prior to any renovation or demolition, ensure that all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities are implemented as</p>



	The potential for the generation of airborne silica dust exists when manipulating the noted building materials.	<p>outlined in the Ontario Ministry of Labour Guideline - Silica on Construction Projects dated April 2011</p> <p>Every employer shall also ensure that the TWAEV of a worker to silica is reduced to the lowest practical level and in any event shall not exceed 0.05 milligrams per cubic metre of air by volume for cristobalite and tridymite, and 0.10 milligrams silica per cubic metre of air by volume for quartz and tripoli.</p>
Vinyl Chloride	Likely present in stable form in pipes, paints and finishes.	No recommendations warranted at this time.

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## APPENDICES

**Appendix 1** – Current Asbestos Analytical – January 2016

**Appendix 2** – Current Lead Analytical – January 2016

**Appendix 3** – Photos

## **1.0 INTRODUCTION**

Greenough Environmental Consulting Inc. (GEC) was commissioned by the Canadian Food Inspection Agency (CFIA) under the direction of Mr. Blair Murphy, to provide a designated substance report (DSR) for the upcoming A-Wing and C-Wing renovation project within building 201 located at 3851 Fallowfield Road in Ottawa, Ontario.

The purpose of the investigation was to identify the quantity, location, and condition of designated substances located within the proposed renovation areas.

For the purpose of this survey, GEC made reference to the results obtained within the initial building survey completed by TROW (2003), as well as additional project specific DSRs completed within the building by GEC in recent years.

All DSR work meets the requirements of Section 30 of the Ontario Occupational Health and Safety Act and WHMIS Regulation (formerly Bill 208).

## **2.0 SCOPE AND METHODOLOGY**

The scope of work followed during the assessment was in accordance with the scope of work agreed upon by GEC and CFIA.

All work was conducted in accordance with provincial regulations (O. Reg 490/09 and 278/05).

The survey included the following designated substances:

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

Materials suspected to contain designated substances, were visually identified based on the surveyor's knowledge as well as historical application of building components. Where permitted, visual identification of materials suspected to contain asbestos was supported by the collection and analysis of representative samples as directed by the Client. Asbestos bulk sampling was performed by GEC in order to meet the current minimum sampling requirements of Ontario Regulation 278/05 - Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (O. Reg. 278/05), as amended.

In Ontario, a material is defined as an ACM if the material has a minimum asbestos content of 0.5% by dry weight. ACMs are divided into two categories: friable and non-friable materials. A friable ACM is a material that can be crumbled, powdered, pulverized or reduced to dust by hand or moderate pressure. Friable materials 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 insulations. Non-friable materials will generally release fibres only when cut, broken or have deteriorated to the point where the binding agents of the material begin to fail. Common non-friable ACMs include drywall joint compound, plaster, textile products (gaskets etc.) and asbestos cement (Transite). It must be noted that some materials, although non-friable intact, become friable upon manipulation (i.e. plaster, ceiling tile etc.).

Bulk samples of suspected ACMs collected by GEC during the site investigation were analyzed for asbestos content at Paracel Laboratories Ltd. (Paracel) in Ottawa, Ontario. The bulk asbestos 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. Paracel is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No. 200812-0).

The laboratory utilizes a "positive-stop" analysis methodology and stopped analysis for the particular set of samples once asbestos concentrations at or above 0.5% is detected. Therefore, samples taken in order to satisfy the requirements of O. Reg. 278/05, were not analyzed if the previous sample was identified as asbestos-containing. **Appendix 1** presents the current asbestos analytical results obtained for the purpose of this survey.

For the purpose of this survey, GEC collected paint chip samples of predominant paint finishes within the specified project areas and submitted the samples to Paracel Laboratories for analysis.

Paracel has received its Certificate of Laboratory Proficiency from the Canadian Association of Environmental Analytical Laboratories (CAEAL) and has achieved accreditation from the Standard Council of Canada.

Analysis of paint chip samples is performed using MOE E3470 (which utilizes EPA Method 6020) which describes the multi-elemental determination of analyses by ICP-OES in environmental samples. The method measures ions produced by a radio-frequency inductively coupled plasma. Analyte species originating in a liquid are nebulized and the resulting aerosol is transported by argon gas into the plasma torch. The ions produced by high temperatures are entrained in the plasma gas and introduced, by means of an interface, into a mass spectrometer. The ions produced in the plasma are sorted according to their mass-to-charge ratios and quantified with a channel electron multiplier. Interferences must be assessed and valid corrections applied, or the data flagged to indicate problems. Interference correction must include compensation for background ions contributed by the plasma gas, reagents, and constituents of the sample matrix. Prior to analysis, samples which require total values must be acid digested using appropriate sample preparation methods.

Inductively coupled plasma-optical emission spectrometry (ICP/OES) is applicable to the determination of sub-ug/L concentrations of a large number of elements in water samples and in waste extracts or digests. When dissolved constituents are required, samples must be filtered and acid-preserved prior to analysis. No digestion is required prior to analysis for dissolved elements in water samples. Acid digestion prior to filtration and analysis is required for groundwater, aqueous samples, industrial wastes, soils, sludges, sediments, and other solid wastes for which total (acid-leachable) elements are required. **Appendix 2** presents the lead analytical results obtained for the purpose of this survey.

### **3.0 SURVEY LIMITATIONS**

This report reflects the observations of the accessed areas and analysis of materials sampled during the current survey. Additional designated substances and hazardous materials exist outside the surveyed areas but they are beyond the scope of this survey.

**GEC cannot warrant against the discovery of additional ACMs or presence of other designated substances inside wall cavities, closed bulkheads and closed ceilings due to the non-destructive nature of this survey.**

The site investigation was completed by Mr. Derek R. Stashick (Environmental Consultant) on January 15<sup>th</sup>, 2016. Observations expressed in this document apply only to conditions on this date and within the subject areas.

## **4.0 RESULTS**

The results of the designated substances survey are discussed below.

### **4.1 Acrylonitrile**

Acrylonitrile is used in production of synthetics and may be present in stable form in paints and adhesives. Over time, acrylonitrile will volatilize out of these materials but it is not expected that acrylonitrile concentrations will exceed the maximum allowable Time Weighted Average limit (TWA) of 2 ppm (parts per million) of air for occupants of the structure.

### **4.2 Arsenic**

Arsenic, or arsenic-containing compounds, may be present in stable form in paints and adhesives. Provided these materials remain in good condition, it is not expected that arsenic concentrations will exceed the maximum allowable TWA of 0.01 mg/m<sup>3</sup> of air for occupants of the subject area.

### **4.3 Asbestos**

For the purpose of this DSR, GEC referenced existing documentation (TROW 2003) as well as additional project specific DSRs completed recently by GEC. Additionally, GEC collected samples of suspect asbestos-containing materials (ACM's) identified within the proposed project areas for laboratory analysis.

Table 2 provides a summary of previously completed sampling by GEC as it relates to the current survey.

<b>TABLE 2 – PREVIOUS RELEVANT ASBESTOS ANALYTICAL RESULTS – BUILDING 201</b>			
<b>3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO</b>			
<b>Sample Reference</b>	<b>Building Material Description</b>	<b>Location of Sample(s)</b>	<b>Result &amp; Type</b>
<b>SAMPLING CONDUCTED BY GEC – JANUARY 2016</b>			
TROW 2003	Ceiling/Wall Plaster	Throughout	ND
<b>GEC 2016</b>	<b>Drywall Joint Compound</b>	<b>Throughout</b>	<b>1% CH</b>

- ND = No Asbestos Detected
- CH = Chrysotile Asbestos
- \* Definition of an "Asbestos-containing material" as defined by the Ontario Ministry of Labour Regulation 278/05 is any material found to contain 0.5% or greater asbestos by dry weight.

Table 3 provides results for asbestos analytical data collected during the current survey.

<b>TABLE 3 – CURRENT ASBESTOS ANALYTICAL RESULTS – BUILDING 201</b>			
<b>3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO</b>			
<b>Sample Reference</b>	<b>Building Material Description</b>	<b>Location of Sample(s)</b>	<b>Result &amp; Type</b>
<b>SA-01(A)</b>	<b>Sheet Vinyl Flooring – Beige with Stone Pattern and Paper Backing</b>	<b>A-Wing – 4<sup>th</sup> Floor Corridor</b>	<b>10% CH</b>
SA-02(A)	Plaster – Grey Base Layer (Confirmation)	A-Wing – 3 <sup>rd</sup> Floor	ND
	Plaster – White Surface Layer (Confirmation)		ND
<b>SA-03(A)</b>	<b>Brown Duct Sealant</b>	<b>A-Wing Ceiling Space</b>	<b>1.56% CH</b>
SA-04(A-C)	Brown Vinyl Baseboard with Adhesive	A-Wing – 2 <sup>nd</sup> Floor Corridor	ND
SA-05(A-C)	Grout Associated with Ceiling Grid System	A-Wing - Throughout	ND
<b>SA-06(A)</b>	<b>Acoustic Ceiling Tile – 60cm x 120cm – Patterned Pinholes with Pink Back</b>	<b>A-Wing – 4<sup>th</sup> Floor</b>	<b>0.77% AM</b> <b>2.32 CH</b>
<b>SA-07(A)</b>	<b>Textured Ceiling Finish</b>	<b>C-Wing – Front Lobby</b>	<b>3% CH</b>
SA-08(A-C)	Carpet Adhesive	C-Wing – Corridor	ND
SA-09(A-C)	Drywall Joint Compound	C-Wing – Corridor	ND

- ND = No Asbestos Detected
- CH = Chrysotile Asbestos
- AM = Amosite Asbestos
- \* Definition of an "Asbestos-containing material" as defined by the Ontario Ministry of Labour Regulation 278/05 is

any material found to contain 0.5% or greater asbestos by dry weight.

### **Vinyl Flooring Materials:**

Flooring materials identified in the surveyed areas consisted of sheet vinyl flooring ceramic tile or carpet. Analytical results for the sampling of flooring as they relate to this survey are summarized below:

- Three (3) samples (SA-01A/B/C) of a sheet vinyl flooring of a beige sheet vinyl flooring (stone pattern with paper backing) were collected from the 4<sup>th</sup> Floor A-Wing Corridor for analysis. Based on the laboratory analysis, the vinyl flooring was found to contain **10% Chrysotile asbestos**.
  - This particular style of sheet vinyl flooring was identified as the primary flooring material within A-Wing.
  - Any manipulation of this particular style of sheet vinyl flooring must be completed in accordance with the procedures outlined in O.Reg 278/05.

Based on the on-site observations, asbestos-containing flooring materials were identified within the surveyed areas.

### **Wall Systems:**

Wall systems within the surveyed areas consisted of concrete, plaster, ceramic tile, and gypsum board (drywall) with asbestos-containing drywall joint compound.. Analytical results for the sampling of wall systems as they relate to this survey are summarized below:

- Three (3) samples (SA-09A/B/C) of drywall joint compound were collected from the C-Wing corridor and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with the sampling requirements outlined in O.Reg 278/05, no asbestos was identified in the samples analysed.
  - Previous samples (GEC 2016) of drywall joint compound were collected from various areas within the building outside the project area for analysis. Based on the laboratory analysis, the samples were found to contain **1% Chrysotile asbestos**.
    - All homogeneous drywall joint compound within the building must be treated as an ACM.
    - Any manipulation of drywall with asbestos-containing drywall joint



compound must be completed in accordance with the procedures outlined in O.Reg 278/05.

- Previous samples (TROW 2003) of ceiling/wall plaster were collected from various areas throughout the building and submitted for laboratory analysis. Based on the previous findings, no asbestos was identified in the samples analysed.
  - One confirmation sample (SA-02A) was collected from the 3<sup>rd</sup> floor A-Wing corridor for analysis. Based on the laboratory analysis, no asbestos was identified in the sample analysed.

Based on the previous laboratory data as well as on-site observations, asbestos-containing drywall joint compound has been identified within the surveyed areas.

### **Ceiling Systems:**

Ceiling systems within the surveyed areas consisted of acoustic ceiling tiles, gypsum board (drywall) with asbestos-containing drywall joint compound, and asbestos-containing textured ceiling finish. Analytical results for the sampling of ceiling systems as they relate to this survey are summarized below:

- Three (3) samples (SA-09A/B/C) of drywall joint compound were collected from the C-Wing corridor and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with the sampling requirements outlined in O.Reg 278/05, no asbestos was identified in the samples analysed.
  - Previous samples (GEC 2016) of drywall joint compound were collected from various areas within the building outside the project area for analysis. Based on the laboratory analysis, the samples were found to contain **1% Chrysotile asbestos**.
    - All homogeneous drywall joint compound within the building must be treated as an ACM.
    - Any manipulation of drywall with asbestos-containing drywall joint compound must be completed in accordance with the procedures outlined in O.Reg 278/05.
- Three (3) samples (SA-07A/B/C) of a textured ceiling/wall finish were collected from within the C-Wing Lobby area for analysis. Based on the laboratory analysis, SA-07A was found to contain **3% Chrysotile asbestos**.

- All textured ceiling finish within the project area must be treated as an ACM.
  - Any manipulation of textured wall finish must be completed in accordance with the procedures outlined in O.Reg 278/05.
- Three (3) samples (SA-06A/B/C) of an acoustic ceiling tile (60cm x 120cm with patterned pinholes and pink back) were collected from the 4<sup>th</sup> floor A-Wing corridor and submitted for laboratory analysis. Based on the laboratory analysis, SA-06A was found to contain **2.32% Chrysotile asbestos** and **0.77 Amosite asbestos**.
    - All visually similar acoustic ceiling tiles within the project area must be treated as an ACM.
    - Any manipulation of the acoustic ceiling tiles must be completed in accordance with the procedures outlined in O.Reg 278/05.

Based on the laboratory data as well as on-site observations, asbestos-containing drywall joint compound, textured ceiling finish, and acoustic ceiling tiles have been identified within the surveyed areas

**Mechanical Insulations:**

Insulation on mechanical systems within the surveyed area consisted of fibreglass, or mechanical systems were uninsulated. As fibreglass is not suspected to contain asbestos, no sampling was completed of this material.

Based on the on-site observations, no asbestos-containing mechanical insulation was identified within the surveyed areas. However, based on the age of the building, and previous survey findings the potential exists for asbestos-containing mechanical insulations to be present in concealed locations.

**Miscellaneous Materials:**

Analytical results for the sampling of miscellaneous materials as they relate to this survey are summarized below:

- Three (3) samples (SA-03A/B/C) of a brown duct sealant were collected from the A-Wing ceiling space and submitted for laboratory analysis. Based on the laboratory analysis, SA-03A was found to contain **1.56% Chrysotile asbestos**.
  - All brown duct sealant finish within the project area must be treated as an ACM.

- Any manipulation of the brown duct sealant must be completed in accordance with the procedures outlined in O.Reg 278/05.
- Three (3) samples (SA-04A/B/C) of a brown vinyl baseboard and associated adhesive were collected from the 2<sup>nd</sup> floor A-wing corridor and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with the sampling requirements outlined in O.Reg 278/05, no asbestos was identified in the samples analysed.
- Three (3) samples (SA-05A/B/C) of a grey grout associated with the ceiling grid were collected throughout the A-Wing corridors and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with the sampling requirements outlined in O.Reg 278/05, no asbestos was identified in the samples analysed.
- Three (3) samples (SA-08A/B/C) of a carpet adhesive were collected throughout the C-Wing corridor and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with the sampling requirements outlined in O.Reg 278/05, no asbestos was identified in the samples analysed.

Based on the on-site observations, asbestos-containing brown duct sealant was identified within the surveyed areas. However, based on the age of the building, the potential exists for additional asbestos-containing mechanical miscellaneous materials to be present in concealed locations.

#### **4.4 Benzene**

Benzene is likely present in a stable form within roofing materials, paints and adhesives. Over time, the benzene component volatilizes out of these materials and is released into the ambient air. It is expected that only trace amounts of benzene presently exist in the building materials at the site. It is unlikely that benzene emissions from the building materials on site will exceed the maximum allowable TWAEV of 0.5ppm or occupants of the subject area.

#### **4.5 Coke Oven Emissions**

Coke oven emissions are the exhaust released during the burning process of coke (pure carbon). This process was not observed and is not expected to take place within this building; therefore, it is unlikely that coke oven emission concentrations will exceed the maximum allowable TWAEV of 0.15 mg/m<sup>3</sup> for occupants for the subject area.

#### 4.6 Ethylene Oxides

Ethylene oxides are used in production of many foams, adhesives and paints. Over time, ethylene oxide will volatilize out of these materials and may be present in trace amounts in the ambient air in the area. It is not expected that ethylene oxide levels will become hazardous to occupants of the subject area.

#### 4.7 Isocyanates

Isocyanates are raw materials from which all polyurethane products are made. Over time, isocyanates may volatilize out of these materials but will only be present in trace amounts and are not expected to exceed the maximum allowable TWAEV of 0.005-0.02ppm (depending on type of isocyanate present) for occupants of the subject area.

#### 4.8 Lead

In 1976, the Hazardous Products Act limited the amount of lead in interior paint to 0.5 % by weight (5,000 µg/g). Over the years, the amount of lead in paint has continued to decrease due to cooperative efforts of government and industry.

Based on the laboratory analysis, a minor concentration of lead (27µg/g) was detected in the painted finish within the surveyed areas.

Analytical results for the lead sampling conducted are summarized in **Table 4**.

<b>TABLE 4 – BUILDING 201, 3851 FALLOWFIELD ROAD, OTTAWA, ON B-WING RENOVATION PROJECT – CURRENT LEAD ANALYTICAL RESULTS – JANUARY 2016</b>			
<b>Sample Reference</b>	<b>Building/Item/Location</b>	<b>Surface Colour</b>	<b>Results (ug/g Lead)</b>
LS-01	C-Wing – Wall Paint	Beige	<33
LS-02	C-Wing – Wall Paint	White	286
LS-03	A-Wing – Wall Paint	White	<20

Paint surfaces were generally found to be in good condition with minor localized blistering or peeling observed.

Based on the age of the building and historical applications, lead is assumed to be present in solder on joints of copper piping, caulking in bell fittings associated with cast iron drainage pipe joints and used on electrical wiring/systems (where observed within the renovation areas).

#### **4.9 Mercury**

Mercury vapour is present in fluorescent light tubes identified throughout the survey areas. Additionally, mercury may also be present within thermostats, switches and thermometers (where present).

Based on the age of the building and historical applications, mercury is also assumed to be present in painted surfaces; however, sampling of mercury in painted surfaces was not performed for the purpose of this survey.

#### **4.10 Silica**

Based on the age of the building and historical applications, silica is assumed to be present in gypsum (drywall), brick, acoustic ceiling tiles, plaster, drywall joint compound, poured concrete, concrete block and cement mortar identified within the proposed renovation areas (where applicable).

The potential for the generation of airborne silica dust exists when manipulating any of the noted building materials.

#### **4.11 Vinyl Chloride**

Vinyl chloride may be present in paints and finishes. Over time, vinyl chloride will volatilize out of these materials but will only be present in trace amounts and is not expected to exceed the maximum allowable TWA-EV of 1ppm for occupants of the subject area.

## 5.0 RECOMMENDATIONS

### 5.1 Asbestos

The following recommendations are made respecting Ontario Regulation 278/05:

#### Project Specific Recommendations:

- Prior to the planned renovations, all sheet vinyl flooring, drywall joint compound, brown duct sealant, acoustic ceiling tiles and textured ceiling finish that will be or has the potential of being disturbed, must be removed in accordance with the procedures outlined in Ontario Regulation 278/05 as well as the PWGSC Policy regarding Asbestos Management.

#### General Recommendations:

- Suspect materials identified during renovation and/or demolition activities not discussed in this report herein should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.
- That the roles and responsibility of “the owner” as stipulated in Section 8 of Ontario Regulation 278/05 be recognized and adhered to including, but not limited to, notification to occupiers and workers as well as training.
- Ontario Regulation 490/09, as amended to O. Reg. 148/12 - Designated Substance - made under the Occupational Health and Safety Act states that airborne levels of asbestos fibres should not exceed 0.1 f/cc.

### 5.2 Lead

In the event that any work is conducted that has the potential to create airborne lead, every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities as outlined in the Ontario Ministry of Labour Guideline - Lead on Construction Projects dated April 2011.

Every employer shall also ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air as per O.Reg 490/09, as amended to 148/12.

The Occupational Health and Safety Branch of the Ontario Ministry of Labour have published Guideline: Lead on Construction Projects. This document classifies all lead disturbances as Type 1, Type 2a, Type 2b or Type 3 work, and assigns alternate levels of respiratory protection and work procedures for each type of task being performed.

Lead is confirmed and/or assumed to be present in the following materials:

- Painted surfaces (confirmed);
- Caulking in cast iron drainage pipe joints (assumed);
- Solder on the joints of copper pipes (assumed); and
- Solder on Electrical wiring / equipment etc. (assumed).

When piping or wiring is removed during demolition activities, copper and drainage piping or wiring can be cut a small distance (e.g., 5cm) from the joints to avoid disturbance of the solder and joint caulking suspected to contain lead.

The disposal of construction waste containing lead is controlled by Ontario Regulation 347/90 as amended to O. Reg. 302/14 – General Waste Management, under the Ontario Environmental Protection Act. Leachate tests for lead in construction waste must not exceed 5 mg/L in order to be disposed of at a local landfill without treatment.

### **5.3 Mercury**

Mercury or mercury vapour within fluorescent light tubes and other equipment poses no risk to occupants provided the mercury containers remain intact.

Best management practice for disposal of mercury-containing light tubes is to participate in the manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling.

Exposure to mercury in industrial establishments is regulated under O. Reg. 490/09, amended to O. Reg. 148/12. The TWA should not exceed 0.025 mg/m<sup>3</sup> for all forms except alkyl compounds. Alkyl compounds of mercury should not exceed 0.01 mg/m<sup>3</sup>.

All waste material including switches, thermostats and thermometers, must be handled and disposed of according to O. Reg. 347, amended to O. Reg. 302/14. Leachate tests for mercury in

construction waste must not exceed 0.1 mg/L in order to be disposed of at a local landfill without treatment.

#### **5.4 Silica**

Silica dust can be generated by drilling, coring, blasting, grinding, crushing and sandblasting silica-containing materials.

Prior to any renovation or demolition, ensure that all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities are implemented as outlined in the Ontario Ministry of Labour Guideline - Silica on Construction Projects dated April 2011

Every employer shall also ensure that the TWAEV of a worker to silica is reduced to the lowest practical level and in any event shall not exceed 0.05 milligrams per cubic metre of air by volume for cristobalite and tridymite, and 0.10 milligrams silica per cubic metre of air by volume for quartz and tripoli.

- Segregate the work area from the rest of the building to reduce the risk of exposing building occupants to silica dust. Workers leaving the work area should pass through a designated clean room where excess dust can be brushed off clothes and facilities are available to wash dust off skin.
- The work surface should be wetted regularly to limit dust released during striking and abrasion.
- Everyone in the work area should be provided with a half-face respirator equipped with HEPA filters.
- Ensure that all necessary measures and procedures by means of engineering control, work and hygiene practices are implemented to ensure that the TWAEV of a worker to silica is reduced to the lowest practical level and in any event shall not exceed 0.05 mg/m<sup>3</sup> of air for cristobalite and tridymite, and 0.10 mg/ m<sup>3</sup> of air for quartz and tripoli.

#### **6.0 CLOSURE**

This report has been prepared for the sole benefit of the Client and their intended use. The report may not be relied upon by any other person or entity without the written consent of Greenough Environmental Consulting Inc. (GEC), and the Client.



GEC accepts no responsibility for any use that an outside party makes of this report and any reliance on decisions made based on it, are the responsibility of such parties.

This report was not intended to provide direction or procedures for the handling of designated substances and hazardous materials. Only persons with documented, current training in the safe handling of the designated substances and hazardous materials should handle them. Persons handling any of designated substances and/or hazardous materials identified in this survey, or conducting work in the vicinity of these materials are advised to consult this survey and individuals with appropriate experience and training, prior to doing so.

The conclusions presented represent the best judgment of the assessor based on current environmental standards. Due to the nature of the investigation and the limited data available, the assessor cannot warrant against undiscovered environmental liabilities.

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

Yours Truly,

**GREENOUGH ENVIRONMENTAL CONSULTING INC.**



Derek R. Stashick, B.Ed, WRT, CMI, C-NRPP  
Environmental Consultant



Michael P. Buller, B.A. (Hons), ROHT, CRSP, CMI  
Vice President

**APPENDIX 1**

**CURRENT ASBESTOS ANALYTICAL – JANUARY 2016**

## Certificate of Analysis

### Greenough Environmental Consulting Inc.

29 Capital Drive  
Ottawa, ON K2C 0E7  
Attn: Derek Stashick

Phone: (613) 792-4125  
Fax: (613) 792-1077

Client PO:  
Project: 29008  
Custody:

Report Date: 20-Jan-2016  
Order Date: 18-Jan-2016

**Order #: 1604081**

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

Parcel ID	Client ID	Parcel ID	Client ID
1604081-01	SA-01A	1604081-23	SA-07C
1604081-02	SA-01B	1604081-24	SA-08A
1604081-03	SA-01C	1604081-25	SA-08B
1604081-04	SA-02A (Grey)	1604081-26	SA-08C
1604081-05	SA-02A (White)	1604081-27	SA-09A
1604081-06	SA-03A	1604081-28	SA-09B
1604081-07	SA-03B	1604081-29	SA-09C
1604081-08	SA-03C		
1604081-09	SA-04A (Baseboard)		
1604081-10	SA-04B (Baseboard)		
1604081-11	SA-04C (Baseboard)		
1604081-12	SA-04A (Adhesive)		
1604081-13	SA-04B (Adhesive)		
1604081-14	SA-04C (Adhesive)		
1604081-15	SA-05A		
1604081-16	SA-05B		
1604081-17	SA-05C		
1604081-18	SA-06A		
1604081-19	SA-06B		
1604081-20	SA-06C		
1604081-21	SA-07A		
1604081-22	SA-07B		

Approved By:



Emma Diaz For Heather S.H. McGregor, BSc  
Laboratory Director - Microbiology

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

**Client:** Greenough Environmental Consulting Inc.  
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Ottawa, ON K2C 0E7

**Attn:** Derek Stashick  
Tel: (613) 792-4125  
Fax: (613) 792-1077

**Project:** 29008  
**Paracel Report No.:** 1604081

**Received Date:** 18-Jan-16  
**Report Date:** 20-Jan-16

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

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1604081-01	15-Jan-16	sample homogenized	Grey	Sheet Vinyl Flooring	Yes	<b>Client ID: SA-01A</b> Chrysotile Non-Fibers	10 90
1604081-02	15-Jan-16					<b>Client ID: SA-01B</b> not analyzed	
1604081-03	15-Jan-16					<b>Client ID: SA-01C</b> not analyzed	
1604081-04	15-Jan-16	sample homogenized	Grey	Plaster	No	<b>Client ID: SA-02A (Grey)</b> Non-Fibers	100
1604081-05	15-Jan-16	sample homogenized	White	Plaster	No	<b>Client ID: SA-02A (White)</b> Non-Fibers	100
1604081-06	15-Jan-16	sample homogenized	Brown	Sealant	Yes	<b>Client ID: SA-03A</b> Chrysotile Non-Fibers	1.56 98.44
1604081-07	15-Jan-16					<b>Client ID: SA-03B</b> not analyzed	
1604081-08	15-Jan-16					<b>Client ID: SA-03C</b> not analyzed	
1604081-09	15-Jan-16	sample homogenized	Brown	Baseboard	No	<b>Client ID: SA-04A (Baseboard)</b> Non-Fibers	100
1604081-10	15-Jan-16	sample homogenized	Brown	Baseboard	No	<b>Client ID: SA-04B (Baseboard)</b> Non-Fibers	100
1604081-11	15-Jan-16	sample homogenized	Brown	Baseboard	No	<b>Client ID: SA-04C (Baseboard)</b> Non-Fibers	100
1604081-12	15-Jan-16	sample homogenized	Brown	Adhesive	No	<b>Client ID: SA-04A (Adhesive)</b> Non-Fibers	100
1604081-13	15-Jan-16	sample homogenized	Brown	Adhesive	No	<b>Client ID: SA-04B (Adhesive)</b> Non-Fibers	100
1604081-14	15-Jan-16	sample homogenized	Brown	Adhesive	No	<b>Client ID: SA-04C (Adhesive)</b> Non-Fibers	100

**P:** 1-800-749-1947  
**E:** PARACEL@PARACELLABS.COM

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**Attn:** Derek Stashick  
Tel: (613) 792-4125  
Fax: (613) 792-1077

**Project:** 29008  
**Parcel Report No.:** 1604081

**Received Date:** 18-Jan-16  
**Report Date:** 20-Jan-16

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

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1604081-15	15-Jan-16	sample homogenized	Grey	Grout	No	<b>Client ID: SA-05A</b> Non-Fibers	100
1604081-16	15-Jan-16	sample homogenized	Grey	Grout	No	<b>Client ID: SA-05B</b> Non-Fibers	100
1604081-17	15-Jan-16	sample homogenized	Grey	Grout	No	<b>Client ID: SA-05C</b> Non-Fibers	100
1604081-18	15-Jan-16	sample homogenized	White/Brown	Ceiling Tile	Yes	<b>Client ID: SA-06A</b> Amosite Chrysotile Cellulose MMVF Non-Fibers	[AS-PRE] 0.77 2.32 40 30.9 26.01
1604081-19	15-Jan-16					<b>Client ID: SA-06B</b> not analyzed	
1604081-20	15-Jan-16					<b>Client ID: SA-06C</b> not analyzed	
1604081-21	15-Jan-16	sample homogenized	Grey	Stipple	Yes	<b>Client ID: SA-07A</b> Chrysotile Non-Fibers	 3 97
1604081-22	15-Jan-16					<b>Client ID: SA-07B</b> not analyzed	
1604081-23	15-Jan-16					<b>Client ID: SA-07C</b> not analyzed	
1604081-24	15-Jan-16	sample homogenized	Yellow	Adhesive	No	<b>Client ID: SA-08A</b> Non-Fibers	[AS-PRE] 100
1604081-25	15-Jan-16	sample homogenized	Yellow	Adhesive	No	<b>Client ID: SA-08B</b> Non-Fibers	[AS-PRE] 100
1604081-26	15-Jan-16	sample homogenized	Yellow	Adhesive	No	<b>Client ID: SA-08C</b> Non-Fibers	[AS-PRE] 100

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**Client:** Greenough Environmental Consulting Inc.  
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**Attn:** Derek Stashick  
Tel: (613) 792-4125  
Fax: (613) 792-1077

**Project:** 29008  
**Paracel Report No.:** 1604081

**Received Date:** 18-Jan-16  
**Report Date:** 20-Jan-16

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

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1604081-27	15-Jan-16	sample homogenized	Grey	Drywall Joint Compound	No	<b>Client ID: SA-09A</b>	
						Cellulose	1
						Non-Fibers	99
1604081-28	15-Jan-16	sample homogenized	Grey	Drywall Joint Compound	No	<b>Client ID: SA-09B</b>	
						Cellulose	1
						Non-Fibers	99
1604081-29	15-Jan-16	sample homogenized	Grey	Drywall Joint Compound	No	<b>Client ID: SA-09C</b>	
						Cellulose	1
						Non-Fibers	99

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

**Analytes in bold indicate asbestos content which may include:**

**Actinolite, Amosite, Anthophyllite, Chrysotile, Crocidolite and/or Tremolite.**

**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	20-Jan-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.

**Report Notes**

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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**APPENDIX 2**

**CURRENT LEAD ANALYTICAL – JANUARY 2016**

## Certificate of Analysis

### Greenough Environmental Consulting Inc.

29 Capital Drive  
Ottawa, ON K2C 0E7  
Attn: Derek Stashick

Client PO:  
Project: 29008  
Custody:

Report Date: 20-Jan-2016  
Order Date: 18-Jan-2016

**Order #: 1604111**

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

Parcel ID	Client ID
1604111-01	LS-01
1604111-02	LS-02
1604111-03	LS-03

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



**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	20-Jan-16	20-Jan-16

**Sample and QC Qualifiers Notes**

1- GEN01 :Elevated Reporting Limits due to limited sample volume.

**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.

## Sample Results

Lead				Matrix: Paint Sample Date: 15-Jan-16	
Parcel ID	Client ID	Units	MDL	Result	
1604111-01	LS-01	ug/g	20	<33 [1]	
1604111-02	LS-02	ug/g	20	286	
1604111-03	LS-03	ug/g	20	<20	

## Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Matrix Blank</b>									
Lead	ND	20	ug/g						
<b>Matrix Duplicate</b>									
Lead	ND	20	ug/g	ND			0.0	30	
<b>Matrix Spike</b>									
Lead	237		ug/L	5.6	92.7	70-130			

## **APPENDIX 3**

### **PHOTOS**



**Photo 1 – ACM Sheet Vinyl Flooring with Stone Pattern and Paper Backing.**



**Photo 2 – ACM Textured Ceiling Finish**



**Photo 3 – Asbestos Containing Brown Duct Sealant**



**Photo 4 – Asbestos Containing Pink Back Acoustic Ceiling Tile**

## Part 1 General

### 1.1 BACKGROUND

- .1 Asbestos, at a concentration of 0.5% or more by dry weight, has been identified in various building materials within building 201 of the Canadian Food Inspection Agency Complex located at 3851 Fallowfield Road in Ottawa, Ontario. Selected asbestos-containing materials (ACMs) will be or have the potential to be impacted as part of upcoming renovations.
- .2 Project areas include the following:
  - .1 A-Wing:
    - .1 4<sup>th</sup> Floor Corridor;
    - .2 3<sup>rd</sup> Floor Corridor;
    - .3 2<sup>nd</sup> Floor Corridor;
    - .4 Ground Floor Corridor.
  - .2 C-Wing:
    - .1 Ground Floor Main Corridor;
    - .2 Ground Floor Commissionaire Lobby/Washroom Area.
- .3 ACMs identified within the proposed renovation areas include the following:
  - .1 **10% Chrysotile asbestos in friable sheet vinyl flooring paper backing.**
  - .2 **3% Chrysotile asbestos in friable textured ceiling finish.**
  - .3 **2.32% Chrysotile and 0.77% Amosite in non-friable asbestos-containing acoustic ceiling tiles.**
    - .1 Although acoustic ceiling tiles are non-friable while intact, the dust generated upon manipulation is considered to be friable.
  - .4 **1% Chrysotile asbestos in non-friable drywall joint compound.**
- .4 The Abatement Contractor is to review the abatement specification in conjunction with the project specific designated substance survey (DSR) and any architectural plans for the purpose of this renovation project.

## 1.2 SECTION INCLUDES

- .1 Comply with requirements of this Section when performing following Work:
  - .1 Removal/manipulation, as specified, of sheet vinyl flooring and paper backing, textured ceiling finish, acoustic ceiling tiles and drywall joint compound within the pending renovations areas.
  - .2 Removal of friable and non-friable materials containing asbestos.
  - .3 Use of power tools to cut, shape, grind, drill, scrape, or abrade manufactured products containing asbestos.
- .2 All work to be completed in accordance with Ontario Regulation 278/05 "Designated Substance: Asbestos on Construction Projects and in Buildings and Repair Operations."

## 1.3 OUTLINE OF WORK

- .1 Maximum Precautions Abatement Operations: Provide all labour, equipment and materials to complete the following using the Maximum Precautions (Type 3) Abatement Method.
- .2 Moderate Precautions Abatement Operations: Provide all labour, equipment and materials to complete Type 2 operations as indicated in the specification.
- .3 A detailed breakdown of the proposed abatement areas are as follows:

### **A-WING, 4<sup>th</sup>, 3<sup>rd</sup>, 2<sup>nd</sup>, GROUND FLOOR CORRIDORS – TYPE 3 PROCEDURES**

- .1 *Each Type 3 isolation shall encompass the entire A-Wing corridor on each floor.*

#### **A-Wing 4<sup>th</sup> Floor**

- .1 Remove all asbestos containing acoustic ceiling tiles within the corridor.
  - .1 The Abatement Contractor shall remove approximately 400 acoustic ceiling tiles (approximately 288 m<sup>2</sup>) from the corridor.
    - .1 The abatement contractor shall also be responsible for HEPA-vacuuming and damp wiping the existing tracking associate with the acoustic ceiling tiles.
  - .2 Remove asbestos-containing sheet vinyl flooring with paper backing from the corridor.

- .1 The Abatement Contractor shall remove approximately 300 m<sup>2</sup> of sheet vinyl flooring with paper backing from the corridor.
- .3 Sand and smooth asbestos containing drywall joint compound in specified areas within the corridor to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
- .4 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.
  - .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.

### **A-Wing 3<sup>rd</sup> Floor**

- .1 Remove all asbestos containing acoustic ceiling tiles within the corridor.
  - .1 The Abatement Contractor shall remove approximately 400 acoustic ceiling tiles (approximately 288 m<sup>2</sup>) from the corridor.
    - .1 The abatement contractor shall also be responsible for HEPA-vacuuming and damp wiping the existing tracking associate with the acoustic ceiling tiles.
- .2 Remove asbestos-containing sheet vinyl flooring with paper backing from the corridor.
  - .1 The Abatement Contractor shall remove approximately 300 m<sup>2</sup> of sheet vinyl flooring with paper backing from the corridor.
- .3 Sand and smooth asbestos containing drywall joint compound in specified areas within the corridor to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
- .4 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.



- .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.

### **A-Wing 2<sup>nd</sup> Floor**

- .1 Remove all asbestos containing acoustic ceiling tiles within the corridor.
  - .1 The Abatement Contractor shall remove approximately 400 acoustic ceiling tiles (approximately 288 m<sup>2</sup>) from the corridor.
    - .1 The abatement contractor shall also be responsible for HEPA-vacuuming and damp wiping the existing tracking associate with the acoustic ceiling tiles.
- .2 Remove asbestos-containing sheet vinyl flooring with paper backing from the corridor.
  - .1 The Abatement Contractor shall remove approximately 300 m<sup>2</sup> of sheet vinyl flooring with paper backing from the corridor.
- .3 Sand and smooth asbestos containing drywall joint compound in specified areas within the corridor to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
- .4 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.
  - .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.

### **A-Wing Ground Floor**

- .1 Remove all asbestos containing acoustic ceiling tiles within the corridor.
  - .1 The Abatement Contractor shall remove approximately 400 acoustic ceiling tiles (approximately 288 m<sup>2</sup>) from the corridor.
    - .1 The abatement contractor shall also be responsible for HEPA-vacuuming and damp wiping the existing tracking associate with the acoustic ceiling tiles.

- .2 Remove asbestos-containing sheet vinyl flooring with paper backing from the corridor.
  - .1 The Abatement Contractor shall remove approximately 300 m<sup>2</sup> of sheet vinyl flooring with paper backing from the corridor.
- .3 Sand and smooth asbestos containing drywall joint compound in specified areas within the corridor to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
- .4 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.
  - .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.

### **C-WING, GROUND FLOOR – TYPE 3 PROCEDURES**

- .1 *The Type 3 isolation shall encompass the C-Wing Ground Floor Commissionaire's Lobby, Men's Washroom, Women's Washroom, Handicapped Washroom, and Cloak Room.*

### **C-Wing Ground Floor – Commissionaire's Lobby / Washroom Area**

- .1 Remove all asbestos containing textured ceiling finish within the area.
  - .1 The Abatement Contractor shall remove approximately 90 m<sup>2</sup> of the asbestos containing textured ceiling finish from within the Commissionaire's Lobby/Corridor Area, the Handicapped Washroom, and the Cloak Room.
- .2 Sand and smooth asbestos containing drywall joint compound in specified areas within the area to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
- .3 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.

- .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.

**C-WING, GROUND FLOOR, MAIN CORRIDOR – TYPE 2 PROCEDURES**

- .1 Sand and smooth asbestos containing drywall joint compound in specified areas within the area to a paintable finish as directed by CFIA.
  - .1 Exact quantities are not known at this time. Bidding contractors should confirm locations/quantities of drywall manipulation with CFIA prior to bidding.
  - .2 Due to the unknown location or specific new design construction details, the Abatement Contractor shall be responsible for the manipulation of any existing asbestos containing drywall joint compound within these areas.
    - .1 The General Contractor shall mark all locations for any demolition or installation etc., and supply all necessary hardware pieces etc. to the Abatement Contractor.
- .4 All locations of actual materials to be abated shall be confirmed by the Abatement Contractor and General Contractor.
- .5 Repairs or manipulation to any existing asbestos-containing finishes (i.e. patch damaged drywall, installation of metal tracking for new wall or door installations etc.) shall be completed by the Abatement Contractor.
- .6 All “clean” demolition (i.e. removal of door frames from block walls, removal of block walls etc.) shall be completed by the General Contractor upon successful completion of the asbestos abatement.
- .7 The abatement contractor shall coordinate with the general contractor and sub-trades at regular intervals to determine the extent of installations required for the purpose of this project. Coordination discussions shall determine if any renovation work (i.e. installation of millwork, electrical conduits etc.) will impact known asbestos-containing materials that will remain in place. The abatement contractor will ensure that all abatement related work is completed prior to demobilizing from the site.

- .8 Prior to the installation of critical barriers and or seals inside of the work area and immediately adjacent to, these areas shall be cleaned via HEPA-equipped vacuuming and damp-wiping techniques prior to construction of said barriers and or seals.
- .9 Re-instatement of any abated materials shall be the responsibility of the General Contractor and must meet applicable codes and standards.
- .10 The contractor is to confirm all quantities prior to bid submission. It is the responsibility of the bidding contractor to inspect and review site conditions and the abatement scope of work - including quantifying ACMs - prior to submitting tender. All areas specified for removal must be confirmed with the general contractor based on the architectural plans provided by CFIA.
- .11 The contractor must ensure all electrical hazards, smoke and heat alarm issues are addressed prior to abatement. Costs associated with managing (i.e., moving or disabling) the aforementioned systems will be borne by the contractor.
- .12 Direction of air flow must be managed at all times during the abatement effort.
  - .1 All windows are of a fixed nature. All negative air machines must be DOP tested and exhausted into adjacent corridors.
- .13 Any work on scaffolding and/or use of lift device (if required) must be completed in accordance with applicable health and safety protocols including training (Fall Arrest) and personal protective equipment.
  - .1 Decontamination of the equipment is the responsibility of the abatement contractor, if applicable.
- .14 All personnel and subcontracts working in the isolation are to have asbestos awareness training. Proof in the form of signed certification must be submitted.
- .15 Notify the Consultant of material discovered during the work and not apparent from the specifications, or report, pertaining to the work. Do not disturb such material pending instruction from the Consultant.
- .16 CFIA may issue a stop work order at any time if concerns arise regarding safety, the integrity of the work area, security or other related concerns. If CFIA issues a verbal or written "stop work order" due to personnel, environmental or property safety risks or due to violations of rules or regulations, the contractor shall immediately

stop all work and *shall have no right to project delay claims*. The contractor shall not recommence work until authorized to do so by CFIA.

#### **1.4 RELATED SECTIONS**

- .1 See any architectural plans provided by CFIA.

#### **1.5 REFERENCES**

- .1 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-1.205-[94], Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .2 Canadian Standards Association (CSA International).
- .3 Department of Justice Canada.
  - .1 Canadian Environmental Protection Act (CEPA), 1999.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .5 Transport Canada (TC).
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 Underwriters' Laboratories of Canada (ULC).
- .7 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH).
  - .1 NIOSH 94-113-[August 1994], NIOSH Manual of Analytical Methods (NMAM), 4th Edition.
- .8 U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous Substances.
  - .1 29 CFR 1910.1001-[2001], Asbestos Regulations.
- .9 Occupational Health and Safety Act
  - .1 Ontario Regulation 278/05 "Designated Substance: Asbestos on construction Projects and in Buildings and Repair Operations."

**1.6 DEFINITIONS**

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .2 Amended Water: water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.
- .3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions Article, including fallen materials and settled dust.
- .4 Asbestos Work Area: Area where actual removal ACMs takes place.
- .5 Authorized Visitors: CFIA representatives, Engineer, Consultant or designated representative, and representatives of regulatory agencies.
- .6 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
- .7 Occupied Area: any area of building or work site that is outside Asbestos Work Area.
- .8 Polyethylene sheeting (fire rated and non-fire rated where specified) sealed with tape: Polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.
- .9 DOP Test: testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.
- .10 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .11 Negative pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.

- .1 System to maintain minimum pressure differential of 0.02 inches of water relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.
- .12 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.
- .13 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:
  - .1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
  - .2 Reinforce free edges of polyethylene with duct tape and weight bottom edge to ensure proper closing.
  - .3 Overlap each polyethylene sheet at openings not less than 1.5 m on each side.

## **1.7 SUBMITTALS**

- .1 Submittals in accordance with CFIA requirements.
- .2 Before beginning work:
  - .1 Obtain from appropriate agency and submit CFIA necessary permits for transportation and disposal of asbestos waste. Ensure that dump operator is fully aware of hazardous nature of material being dumped and proper methods of disposal. Submit proof satisfactory CFIA that suitable arrangements have been made to receive and properly dispose of asbestos waste.
  - .2 Submit proof satisfactory to CFIA that employees have had instruction on hazards of asbestos exposure, respirator use, dress, use of showers, entry and exit from work areas, and aspects of work procedures and protective measures. Ensure supervisory personnel have attended asbestos abatement course, of not less than two days duration, approved by CFIA. Submit proof

of attendance in form of certificate. Minimum of one Supervisor for every ten workers.

- .3 Submit layout of proposed enclosures and decontamination facilities to CFIA for review.
- .4 Submit documentation including test results for sealer proposed for use.
- .5 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
- .6 Submit proof of Contractor's Asbestos Liability Insurance.
- .7 Submit proof satisfactory to CFIA that employees have respirator fitting and testing. Workers must be fit-tested (irritant smoke test) with respirator that is personally issued.
- .8 Submit Worker's Compensation Board status and transcription of insurance.
- .9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including but not limited to following:
  - .1 encapsulants;
  - .2 amended water;
  - .3 slow-drying sealer.

## **1.8 QUALITY ASSURANCE**

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Ontario Occupational Health and Safety Act.
  - .2 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:
      - .1 Respirator [equipped with HEPA filter cartridges], personally issued to worker and marked as to efficiency and purpose, and acceptable to Authority having jurisdiction as suitable for



type of asbestos and level of asbestos exposure in Asbestos Work Area. If disposable type filters are used, provide sufficient filters so that workers can install new filters following disposal of used filters and before re-entering contaminated areas.

- .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.
- .2 Requirements for each worker:
  - .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
  - .2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated work suits in receptacles for disposal with other asbestos - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.
  - .3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If

re-entering work area, follow procedures outlined in paragraphs above.

- .4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.
- .3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
- .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.
- .5 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
- .6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
- .7 Visitor Protection:
  - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
  - .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
  - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

## **1.9 WASTE MANAGEMENT AND DISPOSAL**

- .1 Place materials defined as hazardous or toxic in designated containers.
- .2 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .3 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6ml bags or leak proof drums. Label containers with appropriate warning labels.

- .4 Provide asbestos waste manifests to CFIA describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

### **1.10 EXISTING CONDITIONS**

- .1 A project-specific Designated Substance Report is available for review at CFIA Facilities Management Office.

### **1.11 RESPONSIBILITIES OF THE ENVIRONMENTAL CONSULTANT**

- .1 The Environmental Consultant shall be hired by CFIA and be independent of the Contractor on the job.
- .2 All air monitoring specified in the Air Monitoring Section of this Specification shall be adhered to by the Environmental Consultant.
- .3 The Environmental Consultant is responsible for periodic inspections to ensure the work is being done properly with no outside work area contamination. This shall include visual inspections of adjacent classrooms to ensure dust and or debris has not migrated into these areas.
- .4 The Environmental Consultant has the authority to stop work due to lack of cooperation by the Contractor, contamination of areas outside the work area, or any violations of the Specifications, or Federal, State and Local regulations.
- .5 If any inspection fails, the Environmental Consultant shall notify the Contractor stating the reason for the failure. The Contractor shall correct the problem and the Environmental Consultant shall perform another inspection. This process shall be repeated until the Contractor's work has passed inspection.
- .6 If any air test exceeds acceptable levels (0.01 f/cc), the Environmental Consultant shall notify the Contractor, who shall stop work and correct the problem immediately. If the fibre levels remain high the Environmental Consultant will stop the work until the Contractor corrects all problems. The Contractor shall be responsible for additional air monitoring and stand-by costs.

### **1.12 EMERGENCY PRECAUTIONS**

- .1 The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employees of Sub-

Contractors, Client's employees and representatives, provincial inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean room of the worker decontamination facility.

- .2 Access to the work area shall be through a single worker decontamination system located at a designated location of the work site. All other means of access (doors, windows, hallway, etc.) shall be blocked or locked to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out air lock that shall be sealed except during the removal of containerized asbestos waste from the work area and emergency exits for use in case of fire and/or accident. Emergency exits shall be sealed with fire retardant polyethylene sheeting and tape until needed. These emergency exits shall be clearly marked in English and French.

### **1.13 EMERGENCY PLANNING**

- .1 Emergency planning and procedure shall be developed by the Contractor prior to abatement initiation and agreed to by the Contractor and CFIA.
- .2 Emergency procedures shall be in written form and conspicuously posted in the clean change area and equipment room of the worker decontamination area.
- .3 Everyone, prior to entering the work area, must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.
- .4 Emergency planning shall include written notification to police, fire, and emergency medical personnel of planned abatement activities, work schedule and layout of the work area, particularly barriers that may affect response capabilities.
- .5 Emergency planning shall include consideration of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.
- .6 Employees shall be trained in evacuation procedures in the event of work place emergencies.
- .7 For non-life threatening situations, follow normal procedures with assistance from fellow workers if necessary, before exiting the work place to obtain proper medical treatment.

- .8 For life-threatening injury or illness, worker decontamination shall take least priority. After measures to stabilize the injured worker, remove him from the work place and secure proper medical treatment.
- .9 Telephone numbers of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

#### **1.14 FIRE PROTECTION**

- .1 The Contractor shall comply with all local fire safety regulations, rules and standards.
- .2 The Contractor is to ensure that the required exits from the work site are not impaired and that fire watches are set where necessary.
- .3 The Contractor will be required to meet any and all recommendations for job site safety and be required by CFIA and/or fire safety representative to meet their recommendations.
- .4 The Contractor shall maintain adequate fire extinguishers (Class A, B, & C) ready for immediate use and distributed throughout the work area and in and about flammable temporary structures for the duration of the project.

#### **1.15 SCHEDULING**

- .1 Hours of work to be determined by CFIA.
- .2 Not later than five days before beginning Work on this Project notify following in writing:
  - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
  - .2 Regional Office of Labour Canada.
  - .3 Provincial/Territorial, Department of Labour.
  - .4 Disposal Authority.
- .3 Inform sub-trades of presence of ACMs identified in Existing Conditions.
- .4 Submit to CFIA copy of notifications prior to start of Work.

**1.16 OWNER'S INSTRUCTIONS**

- .1 Before beginning Work, provide to CFIA satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from Asbestos Work Area, in aspects of work procedures, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, at minimum:
  - .1 Proper fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel to complete required training.

**Part 2 Products****2.1 MATERIALS**

- .1 Polyethylene: minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: minimum 0.15 mm thick, woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.
- .4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by the Consultant, mixed with water in concentration to provide adequate penetration and wetting of asbestos-containing material.
- .5 Asbestos waste containers: Metal or fibre - type acceptable to dump operator with tightly fitting covers and 0.15 mm minimum thickness sealable polyethylene liners.
  - .1 Label containers in accordance with Asbestos Regulations. Label in both official languages.

- .6 Encapsulants: Type 2 surface film forming, Type 1 penetrating type Class A water based conforming to [CAN/CGSB-1.205].
- .7 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
  - .1 Sealer: flame spread and smoke developed rating less than 50 [and be compatible with new fireproofing].

### **Part 3 Execution**

#### **3.1 PREPARATION**

- .1 Do construction occupational health and safety in accordance with Ontario Occupational Health and Safety Act.

Before beginning Work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.

- .2 Work Areas:
  - .1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.
  - .2 Pre-clean moveable furniture and carpeting (if applicable) within proposed work areas using HEPA vacuum and remove from work areas to temporary location in.
  - .3 Pre-clean fixed casework, plant, and equipment within proposed work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
  - .4 Clean proposed work areas using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.

- .5 Put negative pressure system in operation and operate continuously from time first polyethylene is installed to seal openings until final completion of work including final cleanup. Provide continuous monitoring of pressure difference using automatic recording instrument.
  - .6 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
  - .7 Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Use two layer of polyethylene on floors. Cover floors first so that polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.
  - .8 Build airlocks at entrances to and exits from work areas so that work areas are always closed off by one curtained doorway when workers enter or exit.
  - .9 At each access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used: "CAUTION ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".
  - .10 After work area isolation, remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste. Remove ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by CFIA. Use localized water spraying during fixture removal to reduce fibre dispersal.
  - .11 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to authority having jurisdiction.
  - .12 Where application of water is required for wetting asbestos-containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .3 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:



- .1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work areas, with two curtained doorways, one to Shower Room and one to work area. Install portable toilet, waste receptor, and storage facilities for workers' shoes and protective clothing to be re-worn in work area. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.
- .2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two curtained doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five workers. Provide constant supply of hot and cold or warm water. Contractor responsible for supply of water (unless otherwise stated by CFIA). Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system acceptable to CFIA before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.
- .3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .4 Container and Equipment Decontamination Enclosure System:
  - .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.
    - .1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending

- removal to Washroom. Equip Staging Area with curtained doorway to Washroom.
- .2 Washroom: build Washroom between Staging Area and Holding Room with two curtained doorways, one to Staging Area and one to Holding Room. Provide high - pressure low - volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.
  - .3 Holding Room: build Holding Room between Washroom and Unloading Room, with two curtained doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used.
  - .4 Unloading Room: build Unloading Room between Holding Room and outside, with two curtained doorways, one to Holding Room and one to outside.
- .5 Construction of Decontamination Enclosures:
- .1 Build suitable framing for enclosures [or use existing rooms where convenient] and line with polyethylene sheeting sealed with tape. Use one layer of polyethylene on floors.
  - .2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .6 Separation of Work Areas from Occupied Areas:
- .1 Separate parts of building required to remain in use as indicated from parts of building used for asbestos abatement by means of airtight barrier system constructed as follows:
    - .1 Build suitable floor to ceiling lumber or metal stud framing, cover with polyethylene sheeting sealed with tape, and apply 9 mm minimum thick plywood. Seal joints between plywood sheets and between plywood and adjacent materials with surface film forming type sealer, to create airtight barrier.
    - .2 Cover plywood barrier with polyethylene sealed with tape, as specified for work areas.

- .7 Maintenance of Enclosures:
  - .1 Maintain enclosures in tidy condition.
  - .2 Ensure that barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
  - .3 Visually inspect enclosures at beginning of each working period.
  - .4 Use smoke methods to test effectiveness of barriers when directed by CFIA.
- .8 Do not begin Asbestos Abatement work until:
  - .1 Arrangements have been made for disposal of waste.
  - .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
  - .3 Work area[s] and decontamination enclosures are to be effectively segregated from non-abatement areas.
  - .4 **Viewing window is installed (clear polyethylene or better).**
  - .5 Tools, equipment, and materials waste containers are on hand.
  - .6 Arrangements have been made for building security.
  - .7 Warning signs are displayed where access to contaminated areas is possible.
  - .8 Notifications have been completed and other preparatory steps have been taken.

### **3.2 SUPERVISION**

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

### **3.3 ASBESTOS REMOVAL**

- .1 Before removing asbestos:
  - .1 Prepare site.
  - .2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material

repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.

- .2 Remove saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After abatement has been completed, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA vacuum followed by wet cleaning. After inspection by GEC, apply continuous coat of slow-drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of negative pressure units during this period.

### **3.4 ADDITIONAL MEASURES AND PROCEDURES**

- .1 Silica dust can be generated by drilling, coring, blasting, grinding, crushing and sandblasting silica-containing materials. Concrete, plaster, drywall, textured ceiling finish and ceiling tiles have been identified in the work areas.
- .2 Work on silica-containing materials can be performed by any construction personnel; however, because employers have a duty to protect their workers from silica exposure on construction projects, procedures should be taken to control the potential hazards.
- .3 Lead has been confirmed in painted surfaces.
- .4 Mercury is assumed in select equipment (thermometers, thermostats and switches) and assumed in painted finishes.

- .5 All personnel involved with, or working in the area of destructive activities that will impact silica and lead-containing materials will the following precautions:
  - .1 Take all safety precautions, including the use of PPE, when dealing with lead-containing paints.
  - .2 Segregate the work areas from the rest of the building to reduce the risk of exposing building occupants to silica and lead dust / fumes. Workers leaving the work area should pass through a designated clean room where excess dust can be brushed off clothes and facilities are available to wash dust off skin.
  - .3 The work surfaces should be wetted regularly to limit dust released during striking and abrasion.
  - .4 Everyone in the work area should be provided with a half-face respirator equipped with HEPA filters.
  - .5 Take all necessary measures and procedures by means of engineering control, work and hygiene practices to ensure that airborne lead and silica are reduced to the lowest practical level and in any event shall not exceed the amounts presented in Ontario Regulation 490/09.

### **3.5 FINAL CLEANUP**

- .1 Following cleaning specified above, and when air sampling shows that asbestos levels do not exceed 0.01 fibres/cc as determined by membrane filter method phase contrast microscopy, as described in NIOSH 7400 or equivalent, proceed with final cleanup.
  - .1 Environmental consultant (Greenough Environmental Consulting Inc.) will be hired directly by CFIA for the completion of the noted sampling.
  - .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos-containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
  - .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
  - .4 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.

- .5 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure that no dust or debris remains on surfaces as result of dismantling operations and carry out air monitoring again to ensure that asbestos levels in building do not exceed 0.01 fibres/cc (if requested). Repeat cleaning using HEPA vacuum equipment, or wet cleaning methods where feasible to ensure all dust and debris has been removed.
- .7 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

### **3.6 AIR MONITORING**

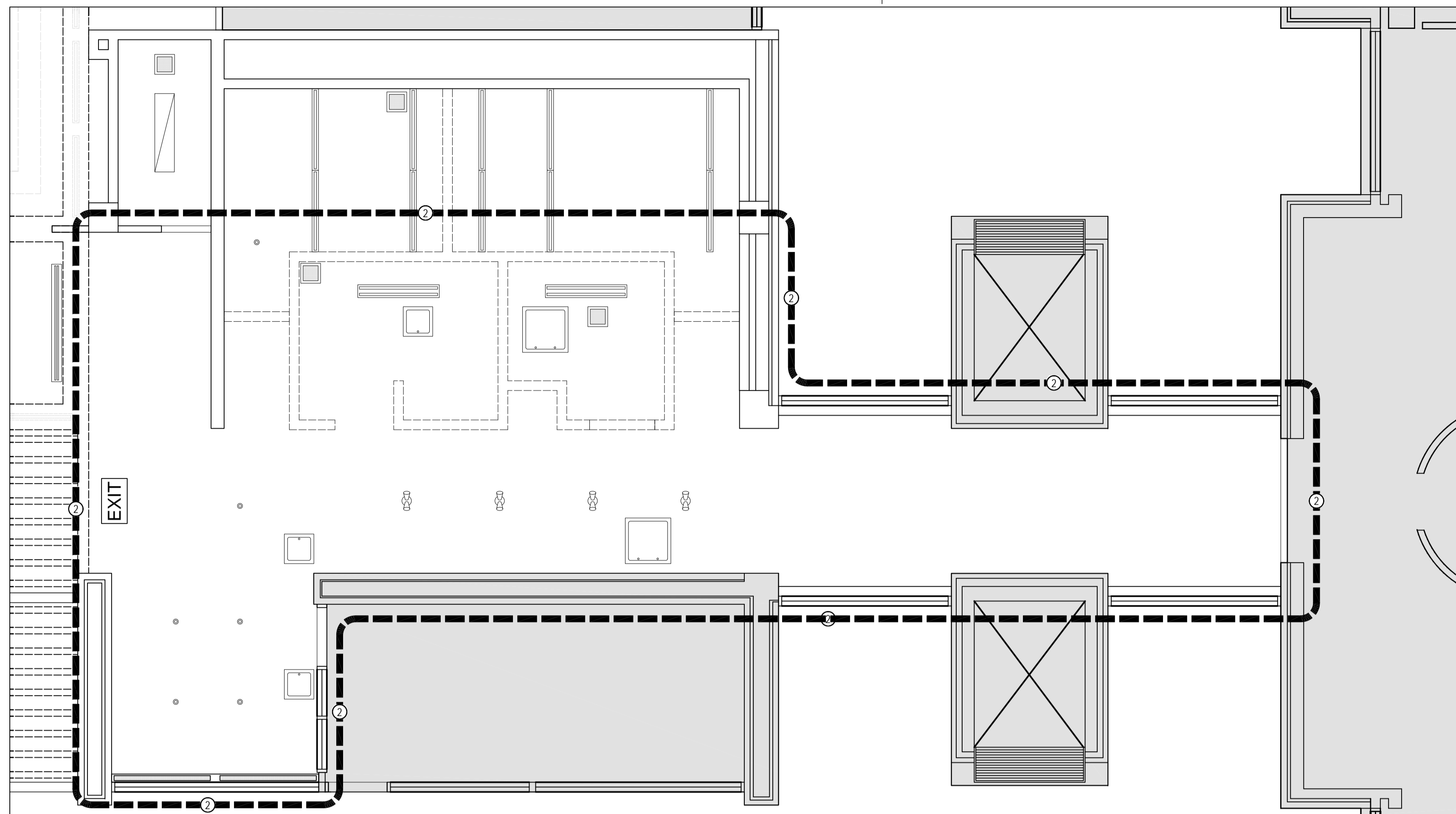
- .1 Greenough Environmental Consulting may conduct periodic air at the request of CFIA.
- .2 Final air monitoring to be conducted as follows: After Asbestos Work Area has passed visual inspection and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period has passed, Environmental consultant will perform air monitoring within Asbestos Work Area.
  - .1 Final air monitoring results must show fibre levels of less than 0.01 f/cc.
  - .2 If air monitoring results show fibre levels in excess of 0.01 f/cc, re-clean work area and apply another acceptable coat of lock-down agent to surfaces.
  - .3 Repeat as necessary until fibre levels are less than 0.01 f/cc.

### **3.7 INSPECTIONS**

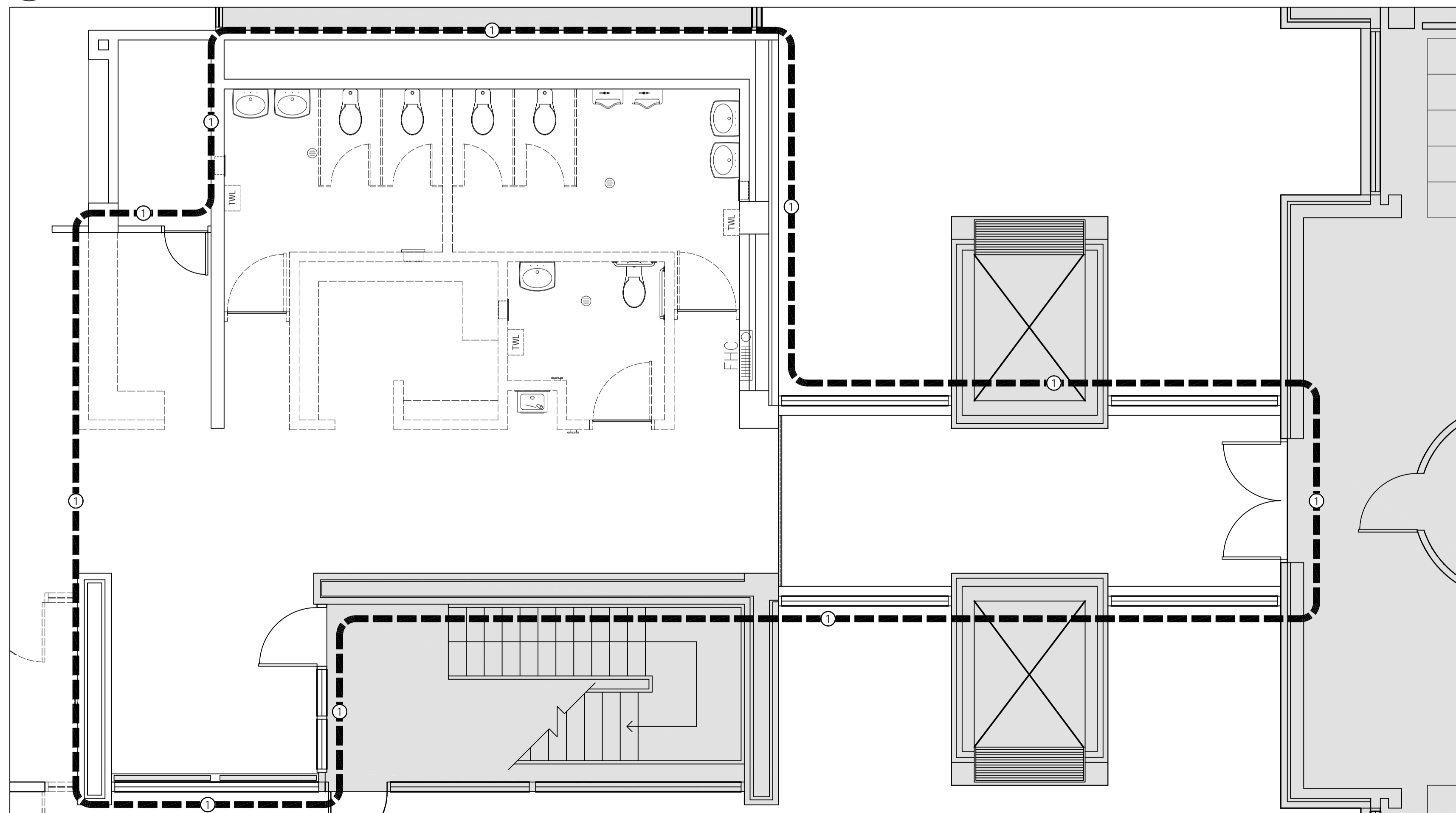
- .1 Environmental consultant will perform inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviations from these requirements that have not been approved in writing by CFIA may result in Work stoppage, at no cost to Owner.
- .2 Environmental Consultant will complete the following inspections:

- .1 Pre-contamination inspection.
- .2 Final visual inspection.
- .3 Final PCM air clearance sampling.
- .4 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 Environmental Consultant may complete the following inspections:
  - .1 Daily inspections and air monitoring services.
- .4 When asbestos leakage from Asbestos Work Area has occurred or is likely to occur Environmental Consultant may order Work shutdown.
  - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

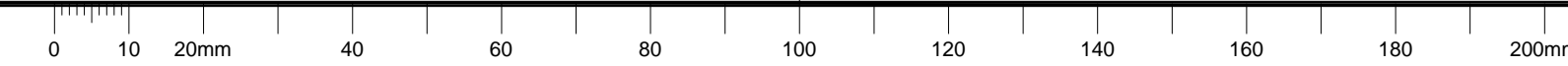
**END OF SECTION**



2 C-WING LOBBY RCP DS REMEDIATION  
A307 1:50



1 C-WING LOBBY PLAN DS REMEDIATION  
A307 1:50



**KEY NOTES**

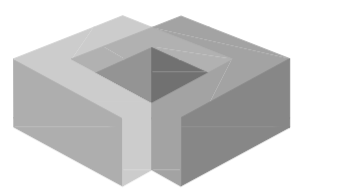
- ① SURFACE PREP ALL GYPSUM SURFACES TO REMAIN FOR PAINT FINISH. REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.
- ② TEXTURED CEILING FINISH TO BE REMOVED. REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

**GENERAL NOTES**

- A. DO NOT SCALE DRAWINGS.
- B. CONTRACTOR TO NOTIFY CONSULTANT IMMEDIATELY OF ANY DISCREPANCIES OF DIMENSIONS, MATERIALS OR CONDITIONS.
- C. FOR COMPLETE SCOPE OF REMEDIATION REFER TO:
  1. PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY A-WING and C-WING RENOVATION PROJECT BUILDING 201 - 3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO, JANUARY 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING
  2. SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

Canada

Public Works and Government Services Canada / Travaux publics et services gouvernementaux Canada  
Real Property Branch / Direction générale des biens immobiliers



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5430 Canotek Road | Ottawa, ON, K1J 9G2  
www.lrj.ca | (613) 842-3434

Contractor to verify all dimensions & conditions on site and immediately notify the Departmental Representative of all discrepancies.

01	FOR ADDENDUM No. 2	2016/02/11
revisions	description	date

A	A detail no. / no. du détail	A
B	B location drawing no. / sur dessin no.	B
C	C drawing no. / dessin no.	C

project / projet

**CFIA OTTAWA (FALLOWFIELD) INTERIOR UPGRADES**

3851 FALLOWFIELD ROAD

drawing / dessin

**C-WING LOBBY DS REMEDIATION**

Designed By / Conçu par: RMA

Date / (yyyy/mm/dd): 2015/09/22

Drawn By / Dessiné par

Date / (yyyy/mm/dd)

Reviewed By / Examiné par

Date / (yyyy/mm/dd)

Approved By / Approuvé par

Date / (yyyy/mm/dd)

Tender / Soumission

Project Manager / Administrateur de projets: BLAIR MURPHY

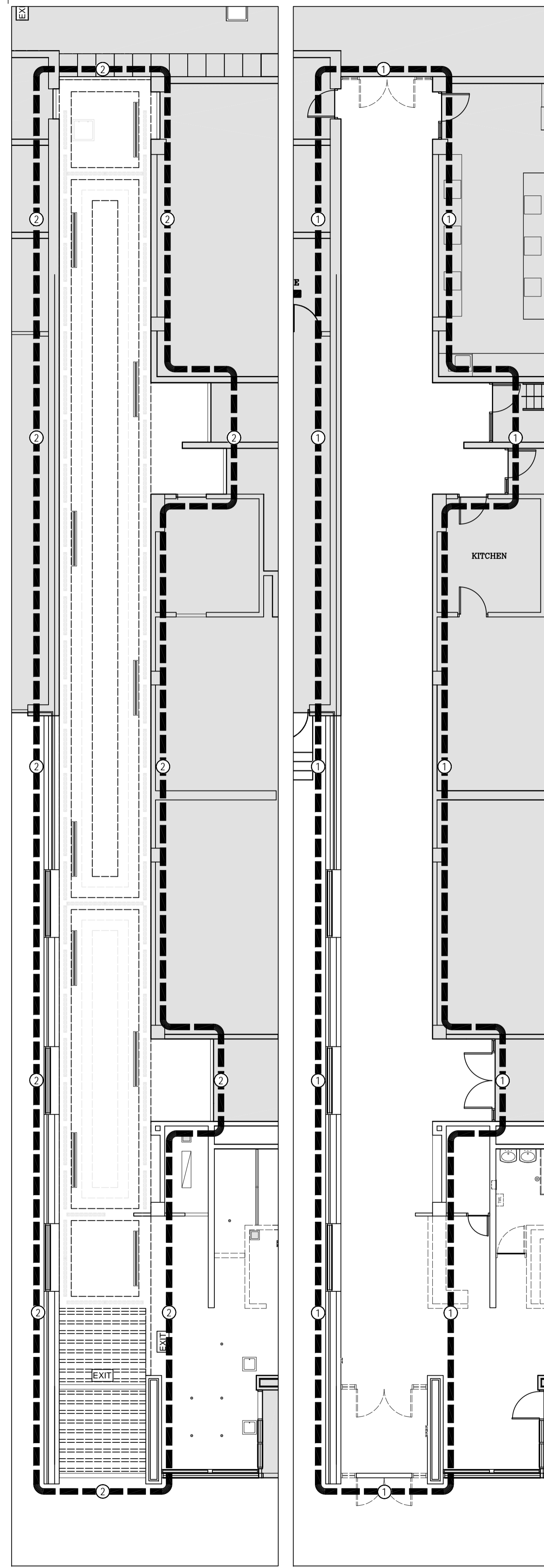
Project no. / No. du projet

H0541

Drawing no. / No. du dessin

A307





KEY NOTES

- ① SURFACE PREP ALL GYPSUM SURFACES TO REMAIN FOR PAINT FINISH. REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.
- ② TYPICAL - DEMOLISH GYPSUM CEILING, BULKHEADS AND ALL ASSOCIATED FRAMING. REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

GENERAL NOTES

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- B. CONTRACTOR TO NOTIFY CONSULTANT IMMEDIATELY OF ANY DISCREPANCIES OF DIMENSIONS, MATERIALS OR CONDITIONS.
- C. FOR COMPLETE SCOPE OF REMEDIATION REFER TO:
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  2. SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

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revisions	description	date
01	FOR ADDENDUM No. 2	2016/02/11

A C	A detail no. no. du détail B location drawing no. sur dessin no. C drawing no. dessin no.	A B C
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project projet

CFIA OTTAWA (FALLOWFIELD) INTERIOR UPGRADES

3851 FALLOWFIELD ROAD

drawing dessin

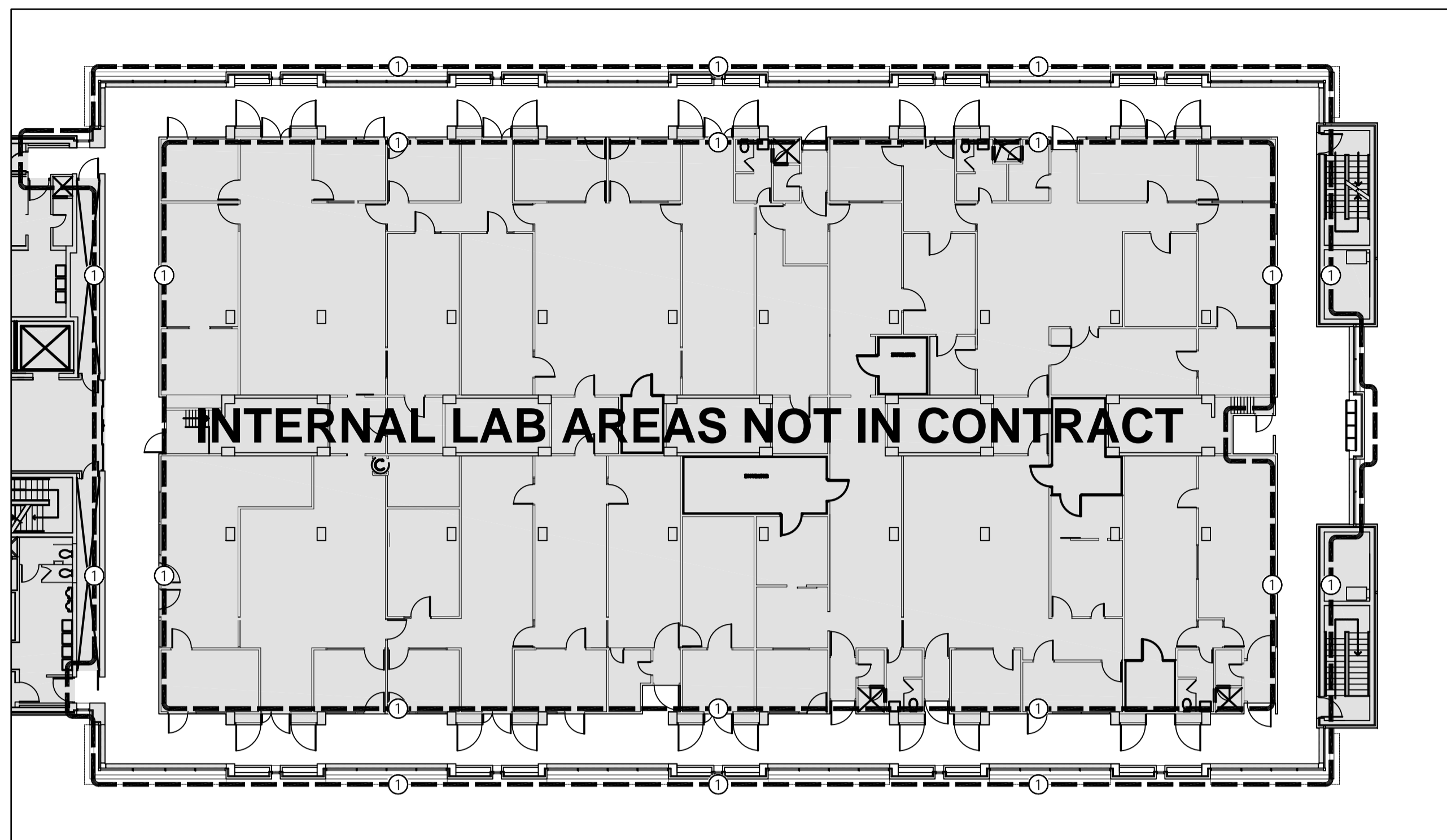
C-WING MAIN CORRIDOR DS REMEDIATION

Designed By	RMA	Conçu par
Date	2015/09/22	(yyyy/mm/dd)
Drawn By		Dessiné par
Date		(yyyy/mm/dd)
Reviewed By		Examiné par
Date		(yyyy/mm/dd)
Approved By		Approuvé par
Date		(yyyy/mm/dd)
Tender		Soumission
Project Manager	BLAIR MURPHY	Administrateur de projets
Project no.		No. du projet

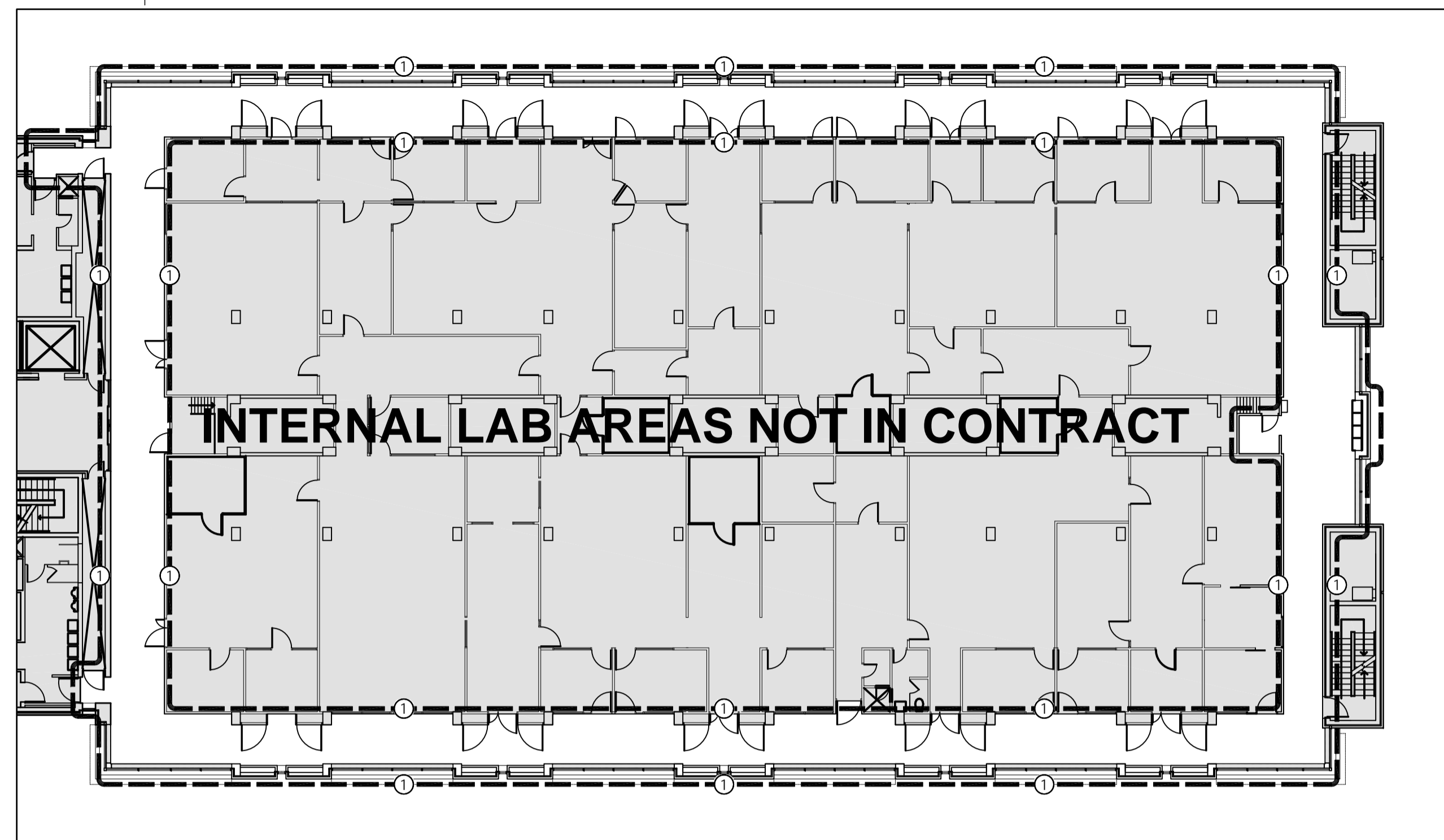
H0541

Drawing no. No. du dessin

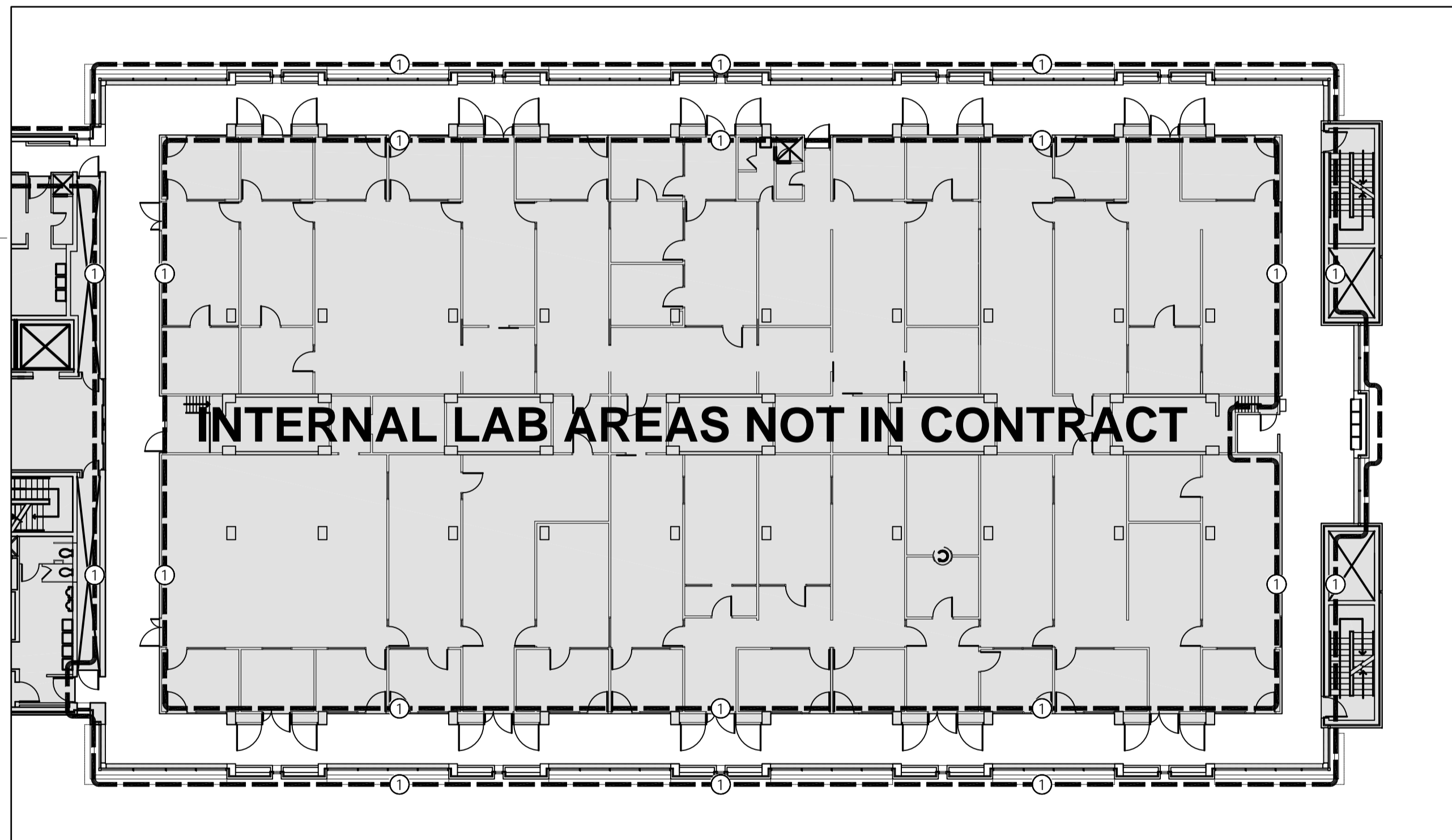
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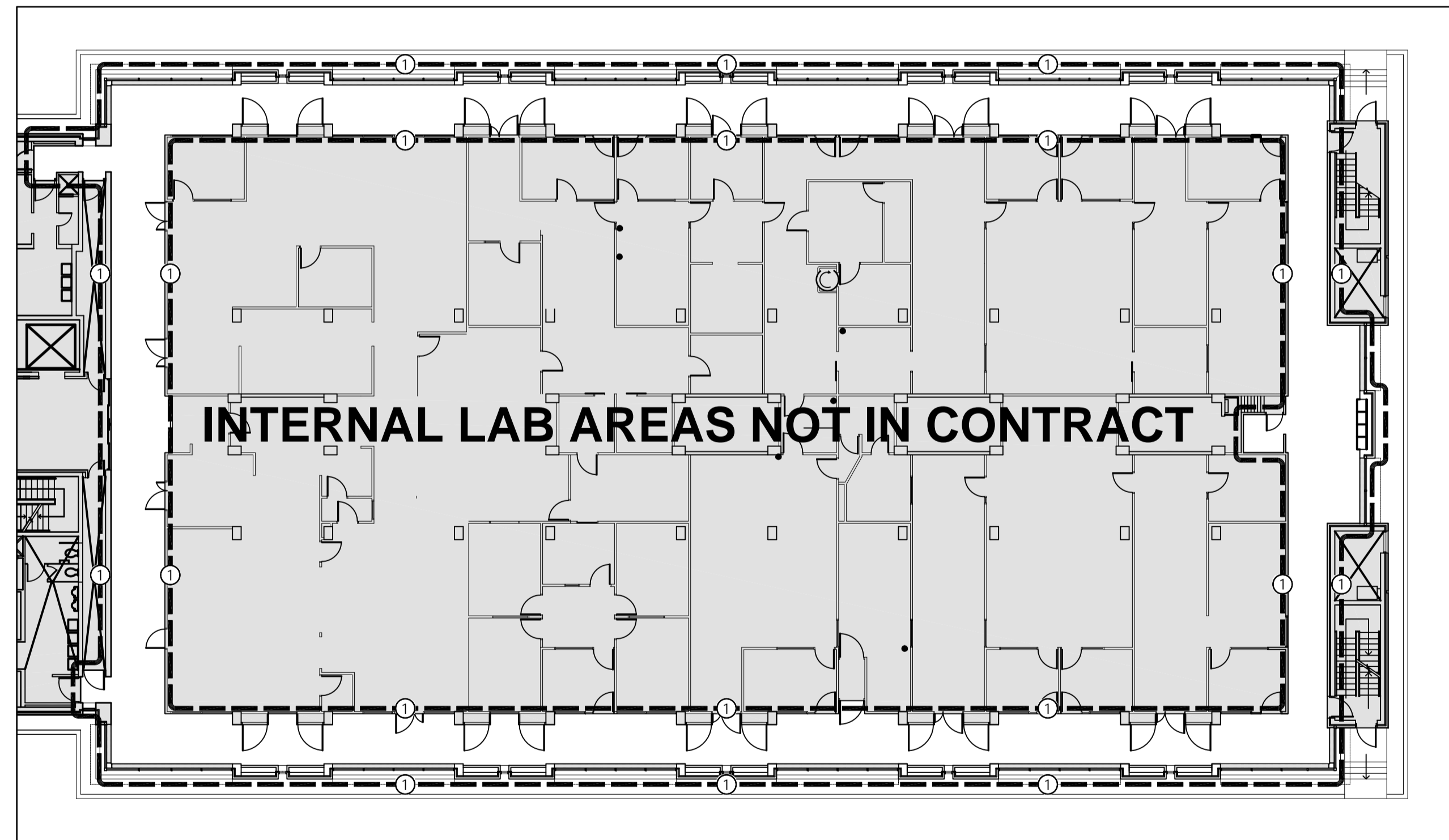
4 A-WING LAB 4TH FLR PLAN DS REMEDIATION  
A309 1:200



3 A-WING LAB 3RD FLR PLAN DS REMEDIATION  
A309 1:200



2 A-WING LAB 2ND FLR PLAN DS REMEDIATION  
A309 1:200



1 A-WING LAB 1ST FLR PLAN DS REMEDIATION  
A309 1:200

**KEY NOTES**

- ① TYPICAL - CUT FLOOR FINISH CENTERED UNDER LAB DOORS AND DEMOLISH ALL SHEET FLOORING IN CIRCULATION CORRIDOR.
- TYPICAL - SURFACE PREP & PAINT FINISH ALL GYPSUM SURFACES TO 100mm ABOVE HEIGHT OF NEW SUSPENDED CEILING.
- REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

**GENERAL NOTES**

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- B. DO NOT SCALE DRAWINGS.
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  1. PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY A-WING and C-WING RENOVATION PROJECT BUILDING 201 - 3851 FALLOWFIELD ROAD, OTTAWA, ONTARIO, JANUARY 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING
  2. SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

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revisions	description	date
01	FOR ADDENDUM No. 2	2016/02/11

A C	A detail no. du detail B location drawing no. sur dessin no. C drawing no. dessin no.	A B C
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project project

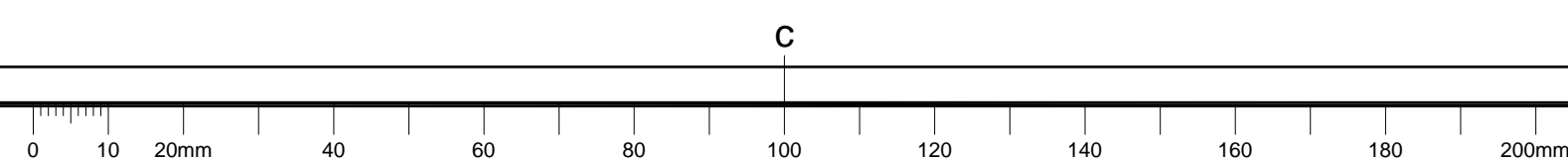
**CFIA OTTAWA (FALLOWFIELD) INTERIOR UPGRADES**

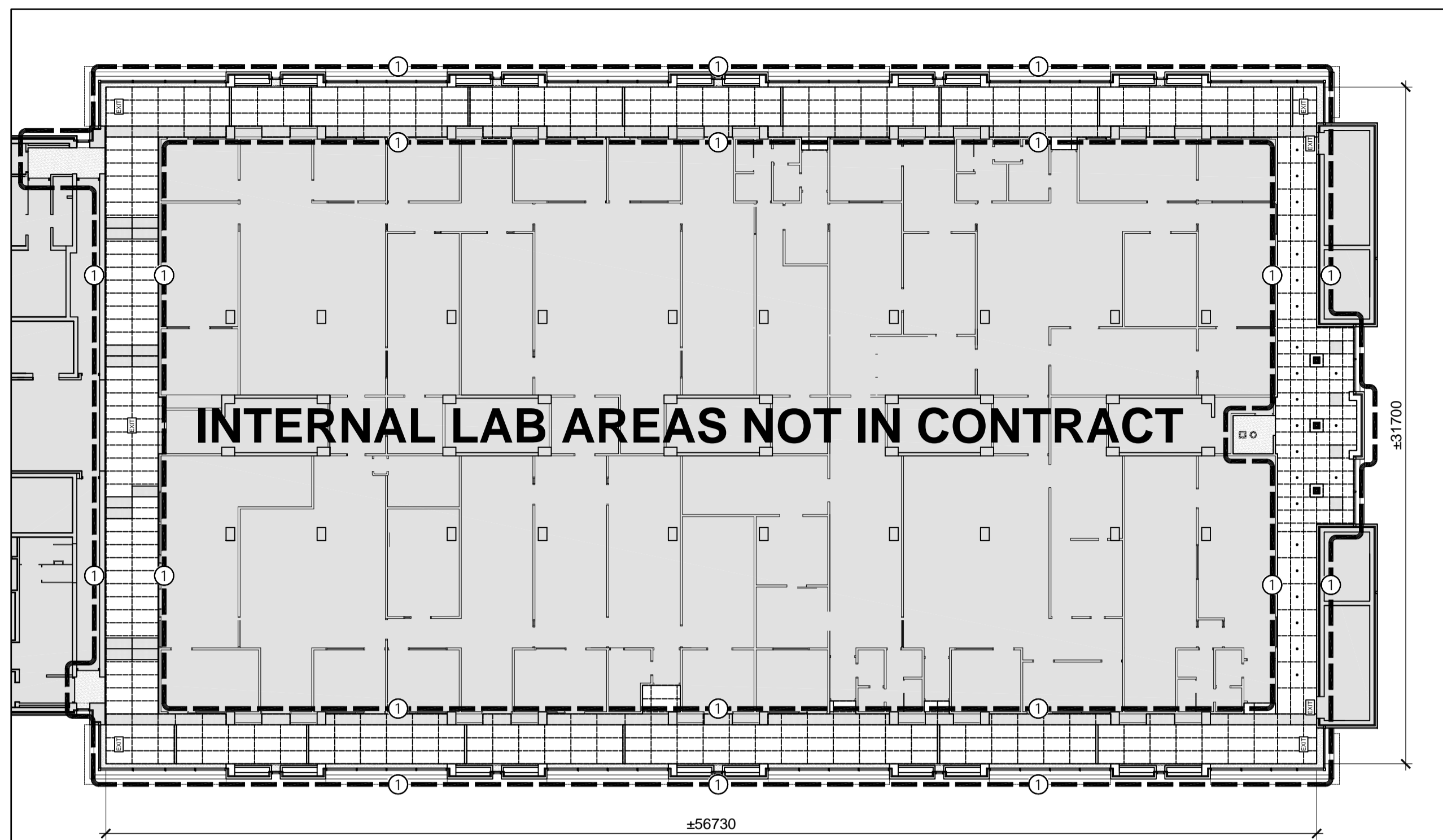
3851 FALLOWFIELD ROAD

drawing dessin

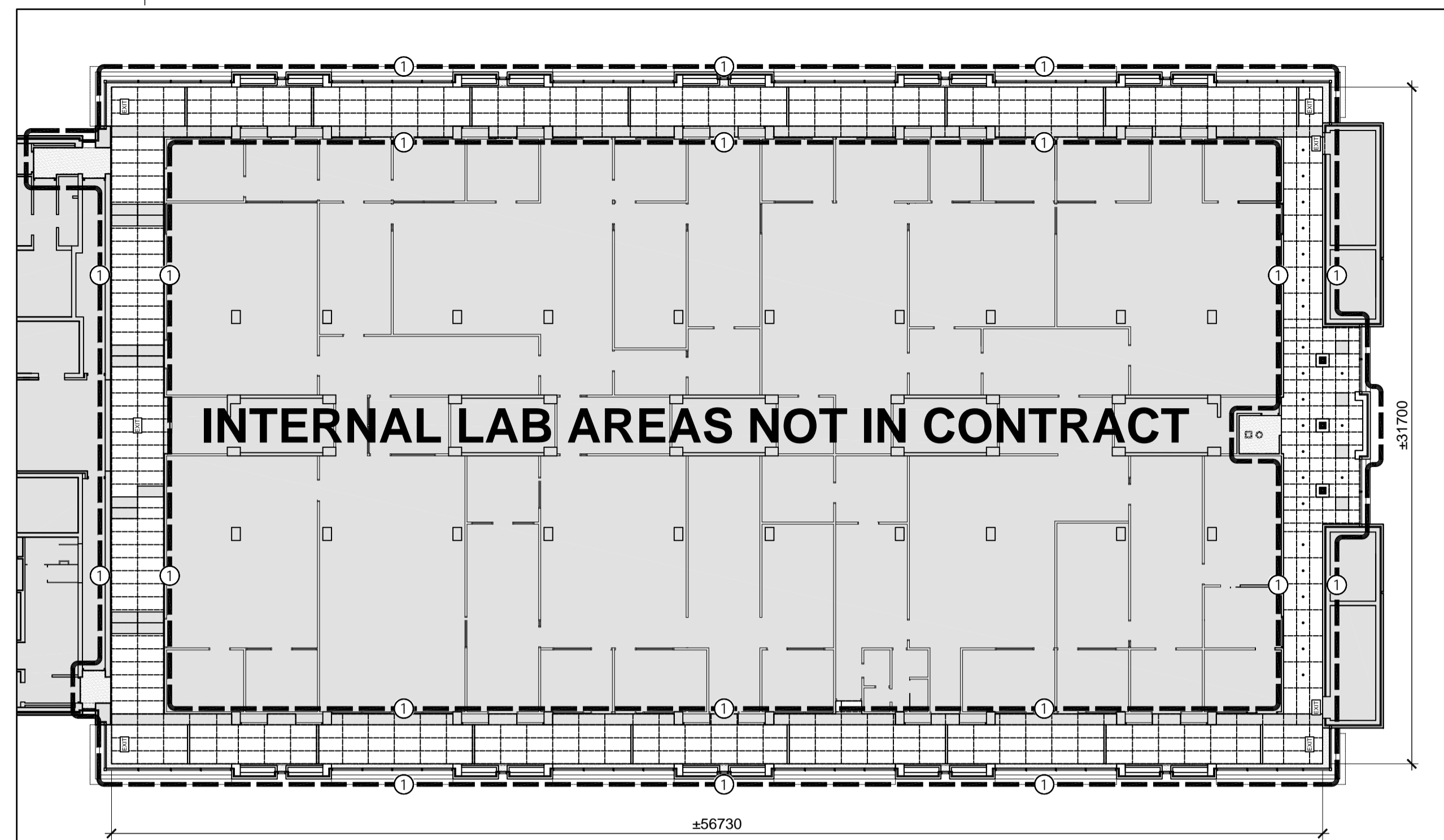
**A-WING LAB PLAN DS REMEDIATION**

Designed By	RMA	Conçu par
Date	2015/09/22	(yyyy/mm/dd)
Drawn By		Dessiné par
Date		(yyyy/mm/dd)
Reviewed By		Examiné par
Date		(yyyy/mm/dd)
Approved By		Approuvé par
Date		(yyyy/mm/dd)
Tender		Soumission
Project Manager	BLAIR MURPHY Administrateur de projets	
Project no.		No. du projet
	H0541	
Drawing no.		No. du dessin
	A309	

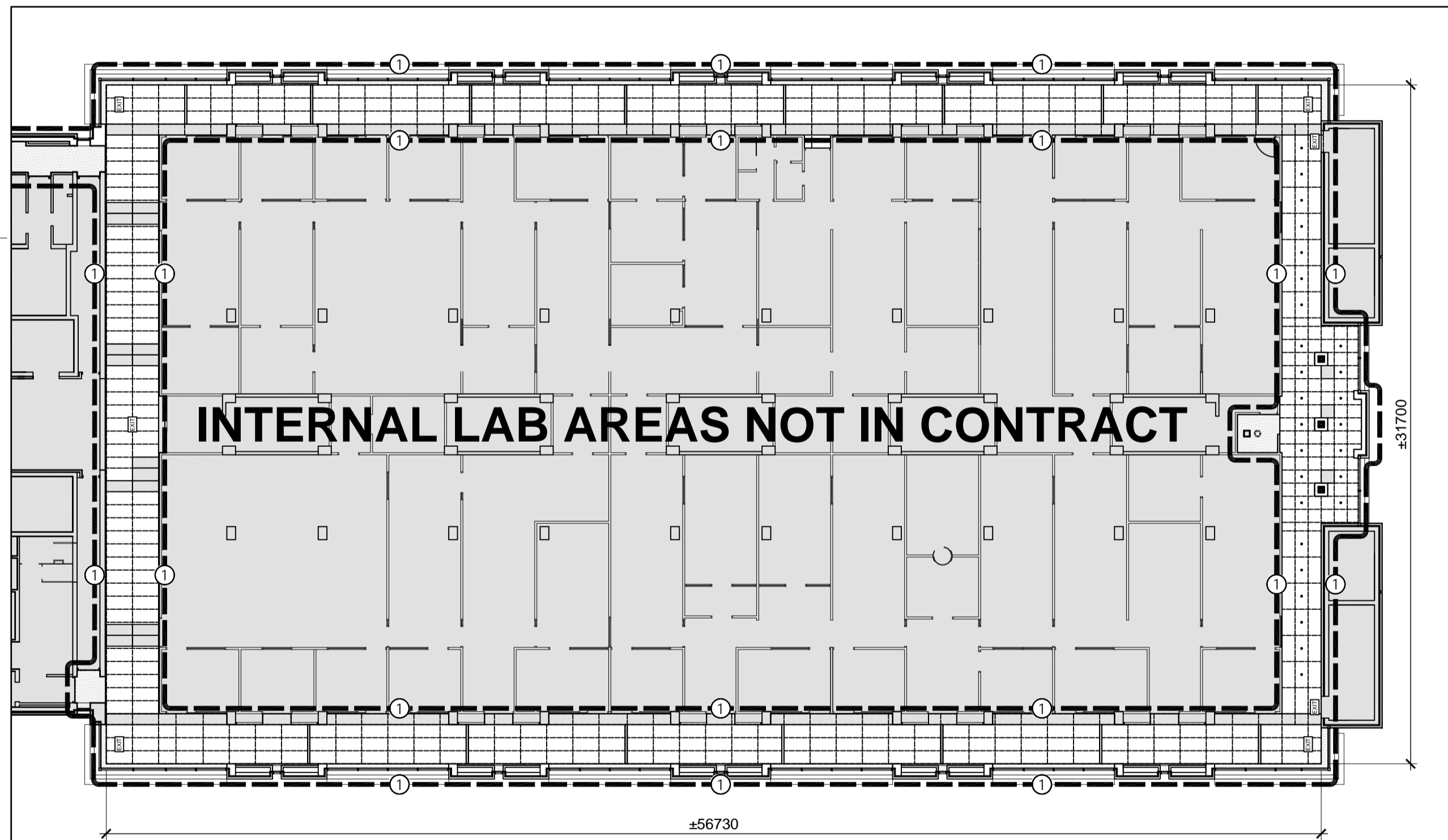




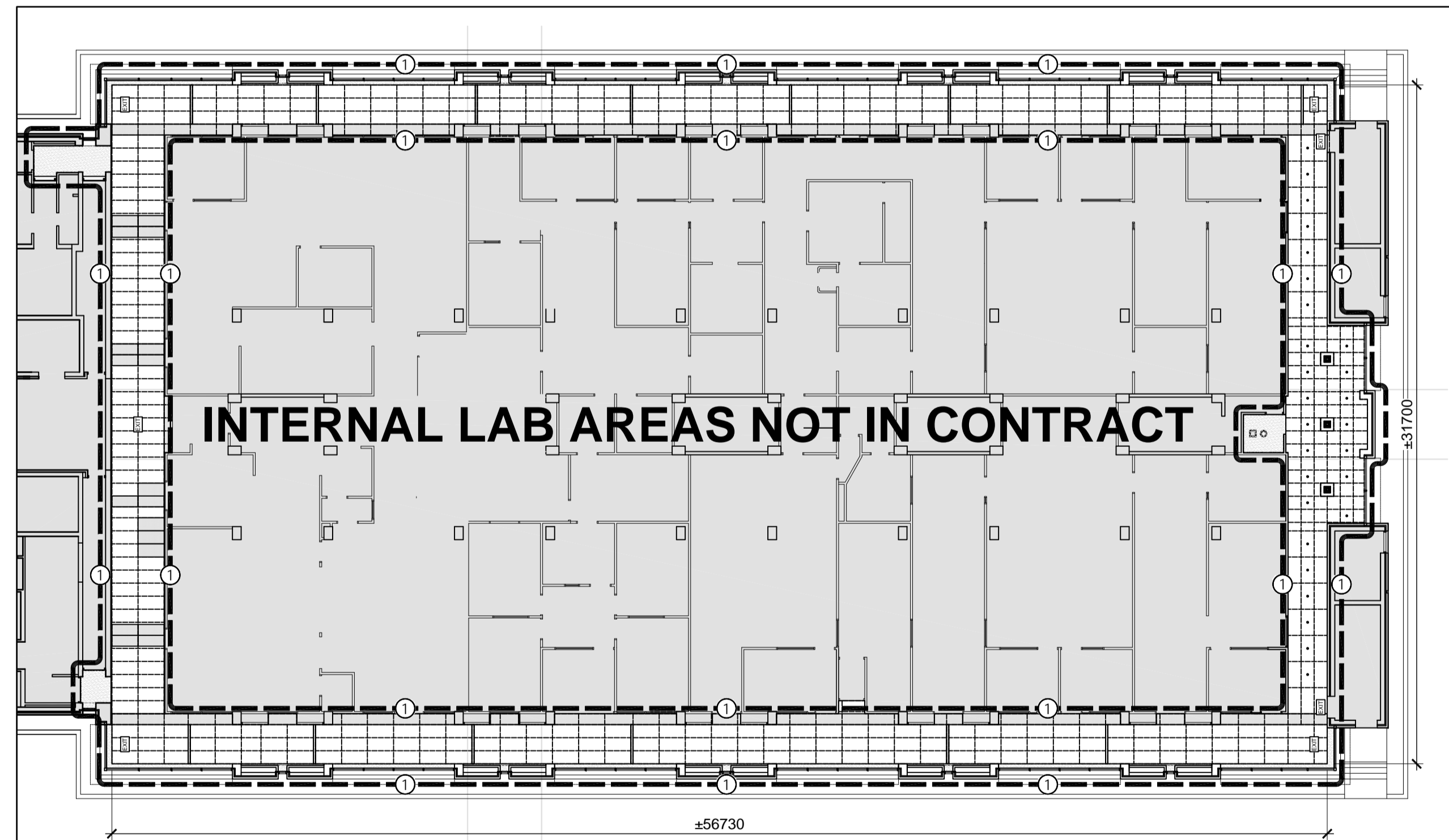
4 A-WING LAB 4TH FLR REFLECTED CEILING PLAN DS REMEDIATION  
A310 1:200



3 A-WING LAB 3RD FLR REFLECTED CEILING PLAN DS REMEDIATION  
A310 1:200



2 A-WING LAB 2ND FLR REFLECTED CEILING PLAN DS REMEDIATION  
A310 1:200



1 A-WING LAB 1ST FLR REFLECTED CEILING PLAN DS REMEDIATION  
A310 1:200

KEY NOTES

- 1 DEMOLISH ACOUSTICAL CEILING TILES, T-BAR SUSPENDED CEILING SYSTEM, AND ALL ASSOCIATED COMPONENTS, TRIMS, AND HARDWARE.
- TYPICAL - SURFACE PREP & PAINT FINISH ALL EXISTING GYPSUM
- REFER TO: SPECIFICATIONS APPENDIX A - DESIGNATED SUBSTANCE REMEDIATION, FEBRUARY, 2016, PREPARED BY GREENOUGH ENVIRONMENTAL CONSULTING.

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revisions	description	date
01	FOR ADDENDUM No. 2	2016/02/11

A C	A detail no. du detail B location drawing no. sur dessin no. C drawing no. dessin no.	A B C
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project projet

CFIA OTTAWA (FALLOWFIELD) INTERIOR UPGRADES

3851 FALLOWFIELD ROAD

drawing dessin

A-WING LAB RCP DS REMEDIATION

Designed By	RMA	Conçu par
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Tender		Soumission
Project Manager	BLAIR MURPHY Administrateur de projets	
Project no.		No. du projet
	H0541	
Drawing no.		No. du dessin
	A310	

