

CITY OF WINNIPEG

HAZARDOUS MATERIALS SURVEY

WINNIPEG TRANSIT GARAGE
566 BRANDON AVENUE, WINNIPEG, MB

CONFIDENTIAL

FEBRUARY 2017

HAZARDOUS MATERIALS SURVEY

WINNIPEG TRANSIT GARAGE

City of Winnipeg

Type of document: FINAL REPORT

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EXECUTIVE SUMMARY

MMM Group Limited, a WSP Global Company (MMM) conduct a Hazardous Materials Survey at 566 Brandon Avenue in Winnipeg, Manitoba, herein referred to as the “Site”. The Subject Property is located in a residential area in the Fort Rouge community of Winnipeg.

The Site is located on Lot 12, Block 6, Plan 1606 WLTO in River Lot 25 to 27 Parish of St. Boniface, with municipal address of 566 Brandon Avenue, Winnipeg, MB. The property lot is approximately 7.62m x 30.48m and is currently occupied by a two story home divided into four suites and a basement for utilities and storage. Suites 1, 3 and 4 were not accessible at the time of the Site visit.

In summary, based on the results of this and previous investigations, hazardous building materials have been identified at on Lot 12, Block 6, Plan 1606 WLTO in River Lot 25 to 27 Parish of St. Boniface, with municipal address of 566 Brandon Avenue, Winnipeg, MB. The materials, and recommended handling protocols are identified as follows:

- Nine samples were submitted for analysis of asbestos, no samples were identified as ACM.
- Two sets of three paint samples from interior surfaces from the Site (Room 2 and Room 3 – back hallway) were obtained and tested for lead content. Results confirm the presence of LBP in Suite 2 (white paint). The remaining three suites of the structure were not accessible at the time of the Site visit to confirm presence or absence of similar painted surfaces. All similar surfaces within the Site building should be treated similarly for the presence of LBP.
- No MCE were observed at the time of the Site visit.
- During the site visit, MMM visually inspected the Site for the presence of PCB and did not observe materials other than fluorescent light fixtures located in the basement. Based on visual inspection, the fluorescent light fixtures were in working order, did not appear to be damaged or leaking and newer in nature, it is likely that these fixtures are not PCB containing.

MMM recommends that demolition contractor must adhere to the LBP abatement specifications included in **Appendix D** along with implementing general dust control measures when these painted surfaces are disturbed so that particulate, that may contain lead, does not become airborne.

MMM understands that the objective of the Hazardous Materials Survey is to determine the presence or absence of, location, type and condition of various hazardous materials comprising the building structures at the Site for building demolition purposes. The assessments were conducted in accordance with the requirements of the current version of the Manitoba *Occupational Health and Safety Act, 2009* and applicable regulations. The hazardous materials survey focused on the presence of asbestos containing materials (ACMs), lead-based paint (LBP), polychlorinated biphenyls (PCBs), mercury containing equipment (thermostat bulbs).

The statements made in this Executive Summary are subject to MMM Group Limited’s Standard Conditions and Limitations found in Section 5.0 of this report and should be read in its entirety with the remainder of this report.

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1 INTRODUCTION

MMM Group Limited, a WSP Global Company (MMM) conduct a Hazardous Materials Survey at 566 Brandon Avenue in Winnipeg, Manitoba, herein referred to as the “Site”. The Subject Property is located in a residential area in the Fort Rouge community of Winnipeg.

MMM understands that the objective of the Hazardous Materials Survey is to determine the presence or absence of, location, type and condition of various hazardous materials comprising the building structures at the Site for building demolition purposes. The assessments were conducted in accordance with the requirements of the current version of the Manitoba *Occupational Health and Safety Act, 2009* and applicable regulations. The hazardous materials survey focused on the presence of asbestos containing materials (ACMs), lead-based paint (LBP), polychlorinated biphenyls (PCBs), mercury containing equipment (thermostat bulbs).

A site plan is included in **Appendix A**, selected photographs of the Site are included in **Appendix B**, Certificates of Analysis are included in **Appendix C** and Lead – Base Paint Abatement Specifications are included in **Appendix D**.

1.1 BACKGROUND

A Phase I Environmental Site Assessment (ESA) report (Winnipeg Transit Garage, 421 Osborne Street, Winnipeg, July 2016) documented the Site as an adjacent property built in the late 1920s. Based on the age of the structure, it is likely that hazardous materials including ACM, LBP, PCBs and mercury containing equipment may be present.

MMM conducted a site visit of the Subject Property on November 30, 2016. The purpose of the site visit was to determine the location, quantity, and current conditions of hazardous materials associated with the site structures.

2 SITE STRUCTURE DESCRIPTION

The Site is located on Lot 12, Block 6, Plan 1606 WLTO in River Lot 25 to 27 Parish of St. Boniface, with municipal address of 566 Brandon Avenue, Winnipeg, MB. The property lot is approximately 7.62m x 30.48m and is currently occupied by a two story home divided into four suites and a basement for utilities and storage. Suites 1, 3 and 4 were not accessible at the time of the Site visit.

Descriptions of the on-site building and structures are as follows:

Type of Building:	Building Use:	Basement: (yes or no)	Area: (m ²)	Year Constructed:	# of Levels:	General Building Structure:
House, two story.	Rental Suites	Yes	136	Late 1920s	2	Wood frame with stucco siding.

2.1 LIMITATIONS

This hazardous materials survey was completed for City of Winnipeg Transit Department with observations of the site structures that are deemed safe for access. During the site visit three of four suites within the house were not inspected as they were not accessible at the time of the inspection.

The hazardous materials survey report reflects the observations and results of analysis completed on specific mechanical systems, structures and finishes of the site building.

3 HAZARDOUS MATERIALS SURVEY

Due to the age of the building(s), asbestos containing material (ACMs), lead based paint (LBP), and mercury containing equipment (MCE) may be present in the building. As such, mechanical systems, structures and finishes of the site structures were visually assessed to evaluate the suspect presence of these hazardous materials.

3.1 ASBESTOS CONTAINING MATERIALS (ACMS)

3.1.1 ACMS CHARACTERIZATION

Asbestos is a commercial term given to six naturally occurring minerals that are incombustible and separable into fibers. The fibers are strong, durable and resistant to heat and fire and are long, thin and flexible enabling them to be woven into cloth. These qualities have resulted in the wide use of asbestos in commercial, industrial, automotive and building materials. Common ACMs include pipe-covering, insulating cement, insulating block, refractory and boiler insulation materials, transite board, fireproofing spray, joint compound, vinyl floor tile, ceiling tile, mastics, roofing products and duct insulation for HVAC applications. Although the common use of friable (hand pressure crumbles the material easily) ACMs in construction generally ceased voluntarily in the mid-1970s it was not until the mid to late 1980's that ACMs use was banned through legislation.

3.1.2 ACMS REGULATORY FRAMEWORK

An ACM in the province of Manitoba is defined under Manitoba's Workplace Safety and Health Act (W210), Parts 36 and 37 of Regulation 217/2006 as follows:

Friable materials containing a concentration of 0.1 percent (by weight) or greater asbestos fibres.

Non-friable material containing a concentration of 1.0 percent (by weight) or greater asbestos fibres.

3.1.3 ACMS ASSESSMENT METHODS

MMM staff inspected the house structure for the presence of friable and non-friable ACMs.

Assessment and sampling for asbestos within the third floor and exterior roof was conducted in accordance with Manitoba's Workplace Safety and Health Act (W210), Parts 36 and 37 of Regulation 217/2006. Suspected ACM samples were submitted for laboratory analysis for Polarized Light Microscopy (PLM) with dispersion staining, in accordance with the National Institute for Occupational Safety and Health (NIOSH) Analytical Method 9002, "Asbestos (bulk) by PLM".

In total, nine samples of suspected ACMs were collected, labelled with sample identification numbers and project details.

3.1.4 ACMS ASSESSMENT RESULTS

Table 1 is a summary of the ACMs samples collected. Laboratory certificates for these results are presented in **Appendix C**.

Table 1: Asbestos Containing Material Analytical Results Summary

Sample ID	Sample Description	Asbestos Content	Asbestos Containing
PTR-RM3-01-A	Main hallway, Plaster/mudding	<0.1% PTCT	No
PTR-RM3-01-B	Main hallway, Plaster/mudding	<0.1% PTCT	No
PTR-RM3-01-C	Main hallway, Plaster/mudding	<0.1% PTCT	No
ACT-RM4-01-A	4x2ft ceiling tiles, white with squiggles and pin holes.	<1%	No
ACT-RM4-01-B	4x2ft ceiling tiles, white with squiggles and pin holes	<1%	No
ACT-RM4-01-C	4x2ft ceiling tiles, white with squiggles and pin holes	<1%	No
VFT-RM2-01-A	Vinyl floor tile, Suite 2, tan colour	<1%	No
VFT-RM2-01-B	Vinyl floor tile, Suite 2, tan colour	<1%	No
VFT-RM2-01-C	Vinyl floor tile, Suite 2, tan colour	<1%	No

Nine samples were submitted for analysis of asbestos, no samples were identified as ACM.

3.2 LEAD BASED PAINT (LBP)

3.2.1 LBP CHARACTERIZATION

Sources of lead in buildings include lead paint that was used during building construction prior to 1976 and lead-based water pipes and lead-solder joints on copper pipes that were primarily utilized in building construction between 1930 and 1986. Lead from paint, chips and dust can pose health hazards, especially in young children.

Under the *Canada Consumer Product Safety Act* (2010), Surface Coating Materials Regulations (2005), surface coating material (including paint) containing lead in excess of 0.009% (90 mg/kg) is controlled in Canada.

In total, seven samples of suspected LBP were collected, labelled with sample identification number and project details and submitted for analysis.

3.2.2 LBP REGULATORY FRAMEWORK

Currently under the *Canadian Hazardous Products Act* (1986, Updated 2005) paint containing in excess of 0.06 percent (600 mg kg⁻¹) lead has been banned for use in Canada. This definition does not evaluate existing painted surfaces in the work place. In the absence of Canadian based regulations, the U.S. Housing and Urban Development (HUD) guideline is used in this assessment as an evaluation guideline. HUD defines any paint containing over 0.5 percent (5,000 mg kg⁻¹) or 1.0 mg cm⁻² of lead will be considered to be lead-based paint.

3.2.3 LBP ASSESSMENT METHODS

The LBP survey completed by MMM staff included the collection of distinctive paint finishes present internally to the subject structure for the determination of lead content. The paint chip samples were collected by scraping the paint finish to include base and covering finishes. Suspected lead containing material samples collected were submitted to ALS, an independent laboratory for analysis using Inductively Coupled Plasma - Mass Spectrometry (ICP-MS) or Flame Atomic Absorption (FAA). Two sets of three samples of suspected LBP were collected, labelled from the subject structures.

3.2.4 LBP ASSESSMENT RESULTS

Table 2 summarizes the LBP sample results. Laboratory certificates for these results are presented in **Appendix C**.

Table 2: Lead Based Paint Analytical Results Summary

Sample ID	Sample Description	Lead Content	Lead Based
PNT-RM2-01-A	Room 2, white paint	1,250 mg/kg	Yes
PNT-RM2-01-B	Room 2, white paint	134 mg/kg	No
PNT-RM2-01-C	Room 2, white paint	172 mg/kg	No
PNT-RM3-01-A	Room 3 – Main hallway, white over tan, over white over blue paint.	242 mg/kg	No
PNT-RM3-01-B	Room 3 - Main hallway, white over tan, over white over blue paint.	230 mg/kg	No
PNT-RM3-01-C	Room 3 - Main hallway, white over tan, over white over blue paint.	213 mg/kg	No

Note: The U.S.A Housing and Urban Development guideline classify lead based paint as containing >0.5 percent (5,000 mg kg⁻¹).

3.3 MERCURY CONTAINING EQUIPMENT (MCE)

3.3.1 MERCURY CHARACTERIZATION

Mercury is a naturally occurring metal that is found in air, water and soil. Elemental or metallic mercury is the most common industrial form of mercury. Mercury containing equipment (MCE) is commonly found in the workplace, it includes; mercury vapour lamps of high intensity discharge lamps, fluorescent light tubes, thermostats and electrical switches.

3.3.2 MCE REGULATORY FRAMEWORK

In Canada, mercury is generally covered under the *Hazardous Products Act* and the *Transportation of Dangerous Goods Act*.

3.3.3 MCE ASSESSMENT METHODS & RESULTS

No MCE were observed at the time of the Site visit.

3.4 POLYCHLORINATED BIPHENYLS (PCBS)

3.4.1 PCB CHARACTERIZATION

PCBs were widely used as coolants and lubricants for electrical equipment from the 1930s to the 1970s. Historically, PCBs were used in transformers and capacitors, and in such industrial materials as sealing and caulking compounds, inks and additives of paint. The only remaining uses of PCBs in Canada are in electrical transformers and capacitors existing in Canada before July 1, 1980, and in certain other "closed-use equipment" (specifically heat transfer equipment, hydraulic equipment and vapour diffusion pumps) that were in Canada before September 1, 1977. PCB containing equipment must now be taken out of service prior to regulatory deadlines.

3.4.2 PCB REGULATORY FRAMEWORK

Under the *Canadian Environmental Protection Act*, 1999 (CEPA, 1999), the new PCB Regulation (SOR/2008 – 273) was proclaimed in September 2008.

The PCB Regulation set specific deadlines for ending the use of PCBs in concentrations at or above 50 mg kg⁻¹, eliminating all PCBs and equipment containing PCBs currently in storage and limiting the period of time PCBs can be stored before being destroyed. The PCB Regulation replace the Chlorobiphenyls Regulations.

3.4.3 PCB ASSESSMENT

During the site visit, MMM visually inspected the Site for the presence of PCB and did not observe materials other than fluorescent light fixtures located in the basement. Based on visual inspection, the fluorescent light fixtures were in working order, did not appear to be damaged or leaking and newer in nature, it is likely that these fixtures are not PCB containing.

4 SUMMARY OF FINDINGS AND RECOMMENDATIONS

- In summary, based on the results of this and previous investigations, hazardous building materials have been identified at on Lot 12, Block 6, Plan 1606 WLTO in River Lot 25 to 27 Parish of St. Boniface, with municipal address of 566 Brandon Avenue, Winnipeg, MB. The materials, and recommended handling protocols are identified as follows:
- Nine samples were submitted for analysis of asbestos, no samples were identified as ACM.
- Two sets of three paint samples from interior surfaces from the Site (Room 2 and Room 3 – back hallway) were obtained and tested for lead content. Results confirm the presence of LBP in Suite 2 (white paint). The remaining three suites of the structure were not accessible at the time of the Site visit to confirm presence or absence of similar painted surfaces. All similar surfaces within the Site building should be treated similarly for the presence of LBP.
- No MCE were observed at the time of the Site visit.
- During the site visit, MMM visually inspected the Site for the presence of PCB and did not observe materials other than fluorescent light fixtures located in the basement. Based on visual inspection, the fluorescent light fixtures were in working order, did not appear to be damaged or leaking and newer in nature, it is likely that these fixtures are not PCB containing.

MMM recommends that demolition contractor must adhere to the LBP abatement specifications included in **Appendix D** along with implementing general dust control measures when these painted surfaces are disturbed so that particulate, that may contain lead, does not become airborne.

5 STANDARD CONDITIONS AND LIMITATIONS

This report has been prepared for use by the City of Winnipeg in accordance with generally accepted environmental investigation practices at the time of the assessment. MMM understands that the report may be provided to potential renovation contractors, for the purpose of identifying potential hazardous materials in the building. Therefore MMM extends the use of the report to these parties, for the stated purpose. Any use of the report by any other party without the written consent of MMM Group Limited is the sole responsibility of such party. MMM Group Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

The observations and investigations (hereinafter referred to as the “work”) upon which this report are based were carried out in accordance with the terms and conditions of the contract pursuant to which the work was commissioned. The conclusions presented in the report are based solely upon the scope of services described in the contract and governed by the time and budgetary constraints imposed by the contract.

The principles, procedures and standards applied in conducting hazardous materials surveys are neither regulated nor universally the same. The work has been carried out in accordance with generally accepted environmental study and/or professional practice, industry standards and applicable environmental regulations. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report.

The conclusions of the hazardous materials survey are based upon conditions observed at the time of the site visit. No assurance is made regarding changes in conditions subsequent to the investigation.

The conclusions of the hazardous materials survey regarding the current environmental conditions on the subject site are based on the investigations conducted during the work and information from other sources as may be indicated in the report. The accuracy of information from other sources as it may have been considered was not verified, nor was it determined that the information considered represented all such information that exists and pertains to the subject site. The conclusions made are based on reasonable and professional interpretation of the information considered. If additional information concerning environmental conditions of relevance to this report is obtained during future work at the subject property, MMM Group Limited should be notified in order that we may determine if modifications to the conclusions presented in this report are necessary.

This hazardous materials survey report must be read as a whole and sections taken out of such context may be misleading. When discrepancies occur between the preliminary (draft) and final versions of the report, the final version of the report shall take precedence.

MMM Group Limited’s liability with respect to the work is limited to re-performing, without cost, any part of the work that is unacceptable solely as a result of failure to comply with industry standards. MMM Group Limited’s maximum liability is limited to the amount of its remuneration under the original contract, provided that notice of claim is made within one year of the date of delivery of the report.

Appendix A

SITE PLAN



Winnipeg Transit Garage Hazardous Materials Survey

Legend

- Hazardous Materials Survey Site
- Road
- Railway Line

Coordinate System: NAD 83, UTM Zone 14N
 Data Source: Bing, MIML Geographics
 Date Created: June 06, 2016
 Revision Date: December 07, 2016

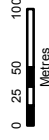
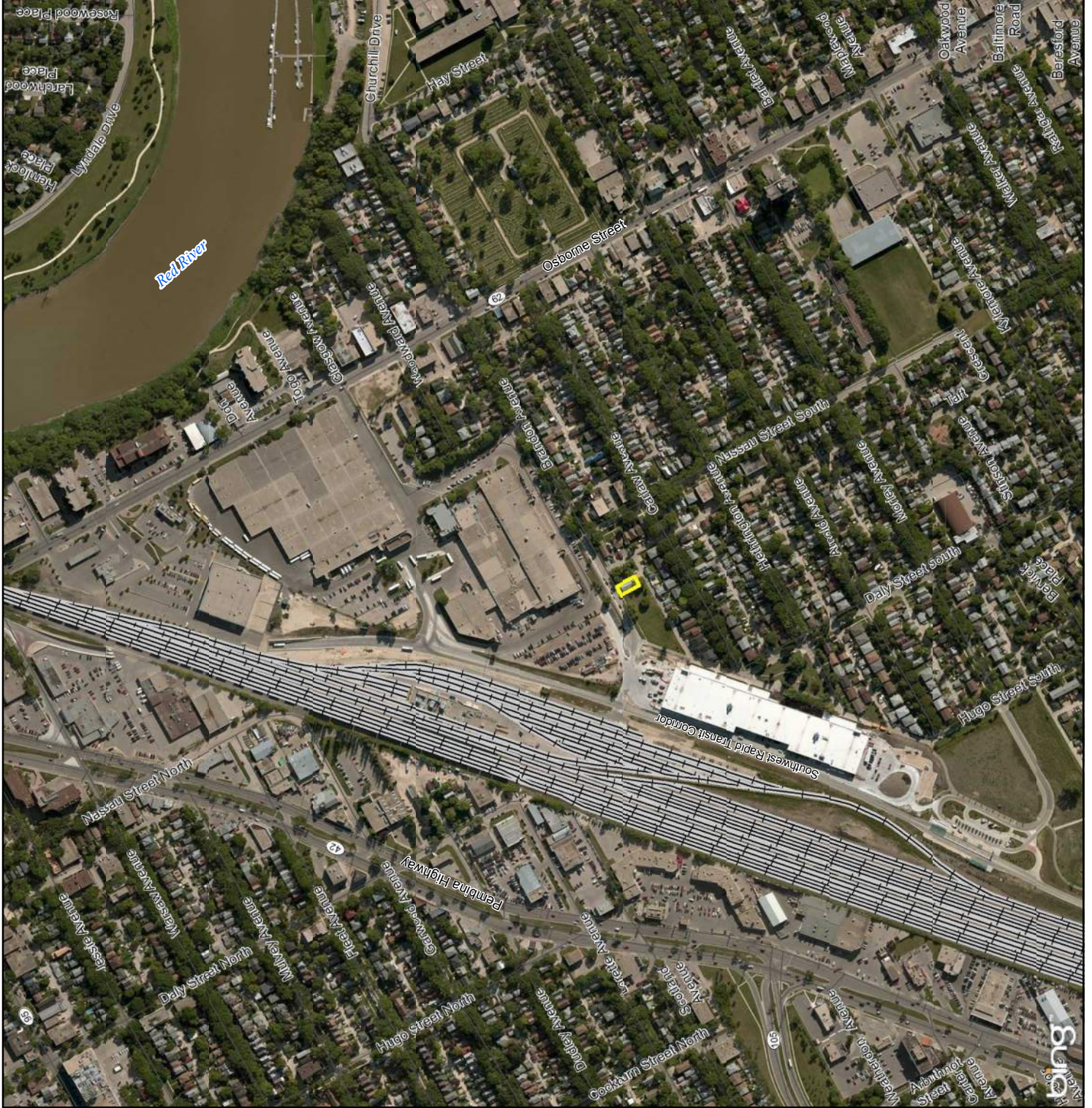
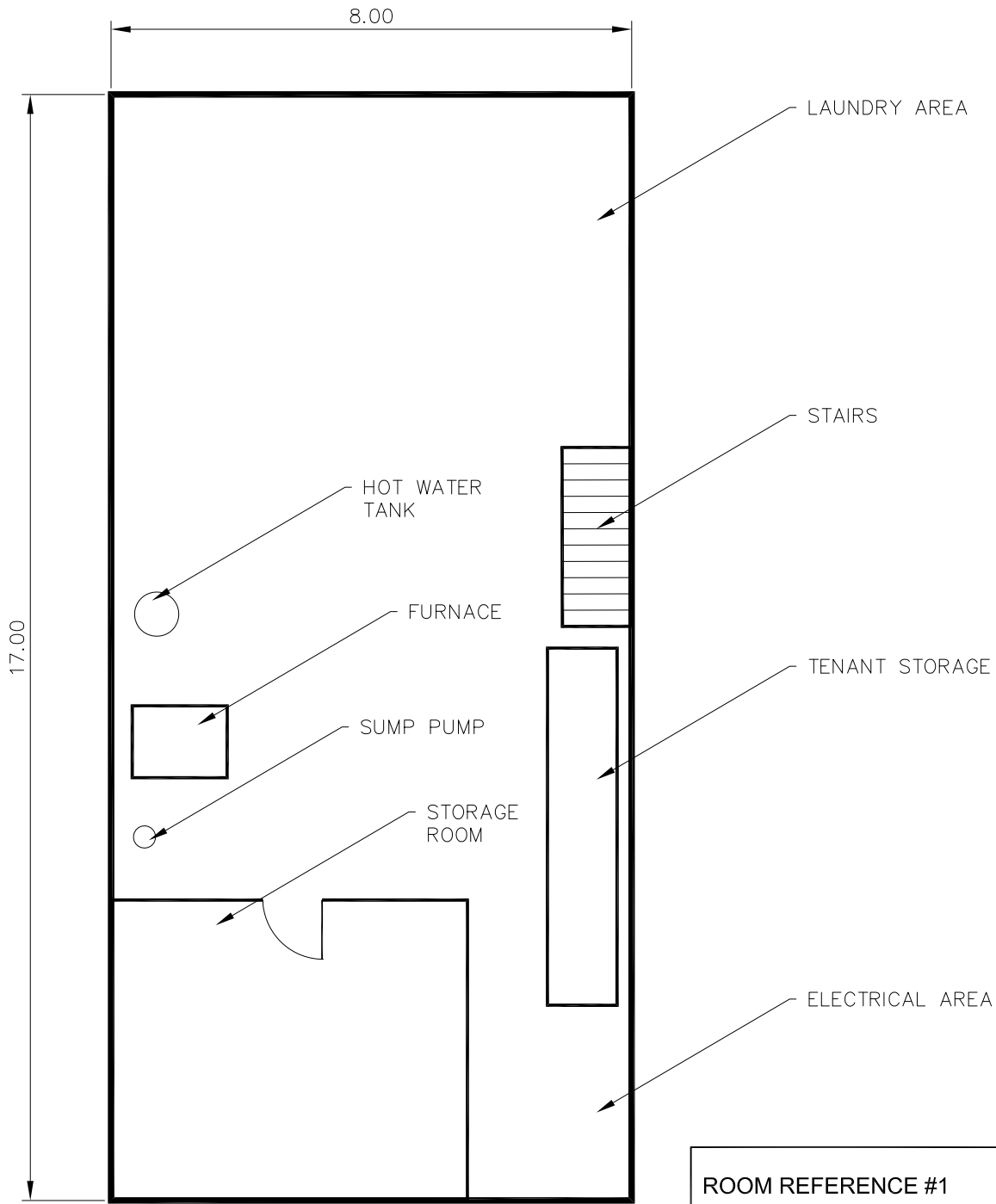


FIGURE 1
566 Brandon Avenue, Winnipeg
Site Location





ROOM REFERENCE #1
ROOM DESCRIPTION:
 Basement, includes stairs.

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
 DECIMALIZED NUMBERS INDICATE METRES

NOTE:
 These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

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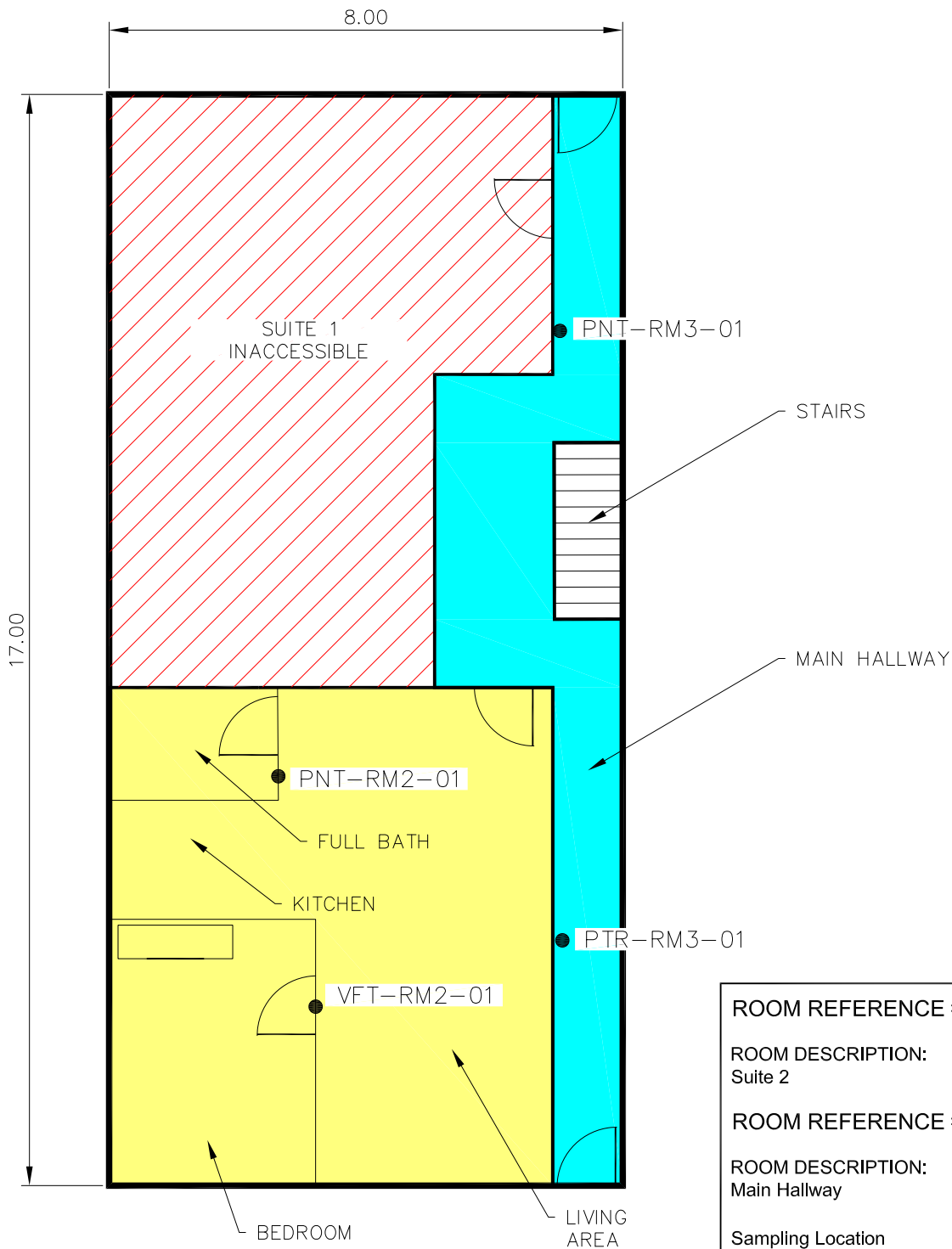
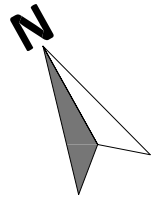
FIGURE 2




BASEMENT FLOOR PLAN
 HAZARDOUS MATERIALS SURVEY
 566 Brandon Avenue, Winnipeg

SCALE:
 1:100

DATE:
 08 DEC 2016

DWG. No.
 5516057-SK-02



ROOM REFERENCE #2	
ROOM DESCRIPTION:	
Suite 2	
ROOM REFERENCE #3	
ROOM DESCRIPTION:	
Main Hallway	
Sampling Location	

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NOTE:
These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

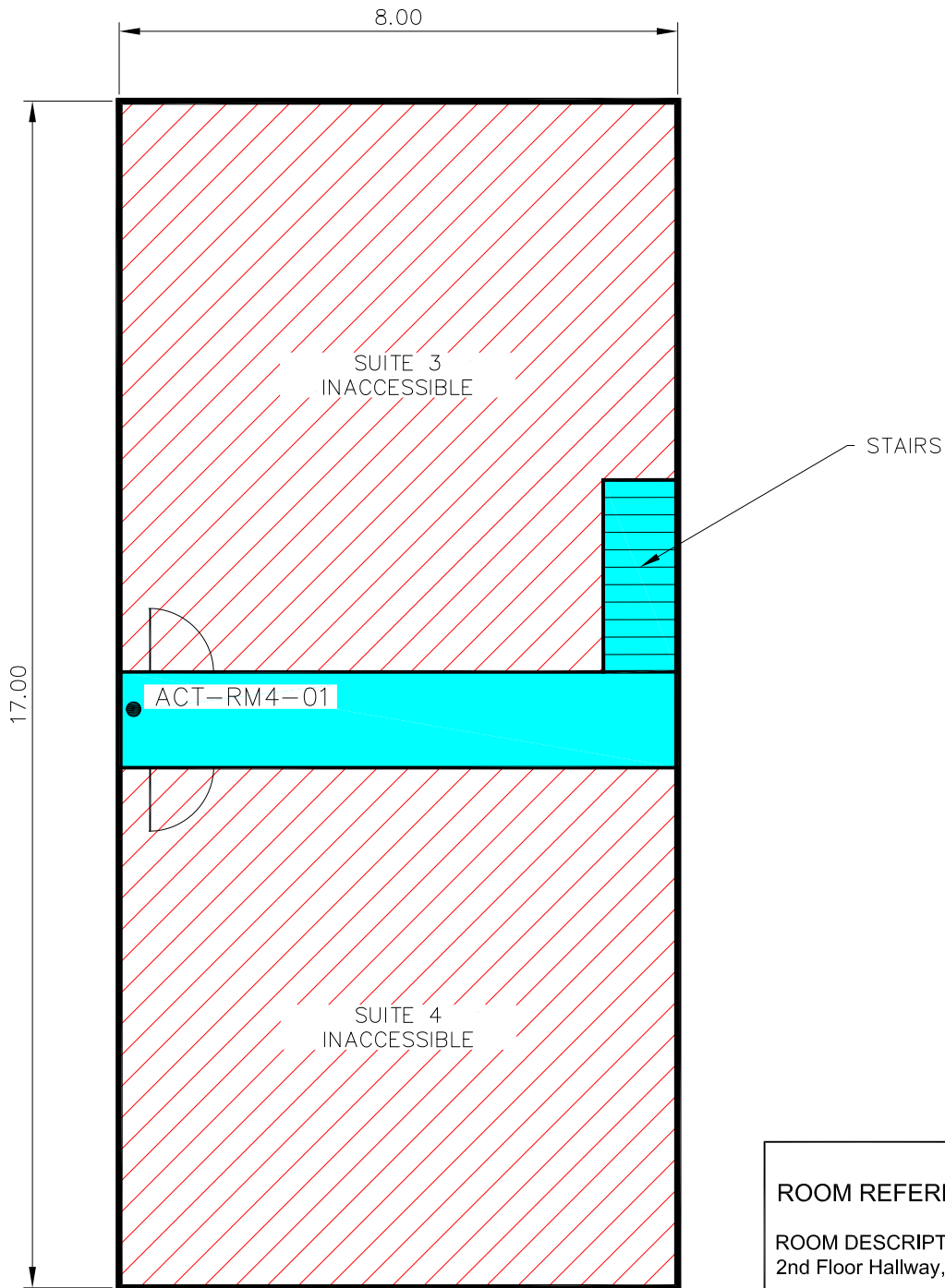
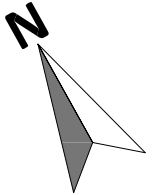
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FIGURE 3
FIRST FLOOR PLAN WITH SAMPLING LOCATIONS
HAZARDOUS MATERIALS SURVEY
566 Brandon Avenue, Winnipeg

SCALE: 1:100	DATE: 08 DEC 2016	DWG. No. 5516057-SK-03
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ROOM REFERENCE #	
ROOM DESCRIPTION:	
2nd Floor Hallway, includes stairs	
Sampling Location	

METRIC

WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NOTE:
These design documents are prepared solely for the use by the party with whom the design professional has entered into a contract and there are no representations of any kind made by the design professional to any party with whom the design professional has not entered into a contract.

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FIGURE 4
SECOND FLOOR PLAN WITH SAMPLING LOCATIONS
HAZARDOUS MATERIALS SURVEY
566 Brandon Avenue, Winnipeg

SCALE: 1:100	DATE: 08 DEC 2016	DWG. No. 5516057-SK-04
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Appendix B

PHOTOGRAPHS



Photo 1. 566 Brandon Ave. Winnipeg, Exterior



Photo 2. Unfinished Basement with utilities.



Date Taken: Nov. 30, 2016

Client: City of Winnipeg

Taken by: CBaldwin

Location: Winnipeg, MB

Project No.: 5516057



Photo 3. First Floor Hallway

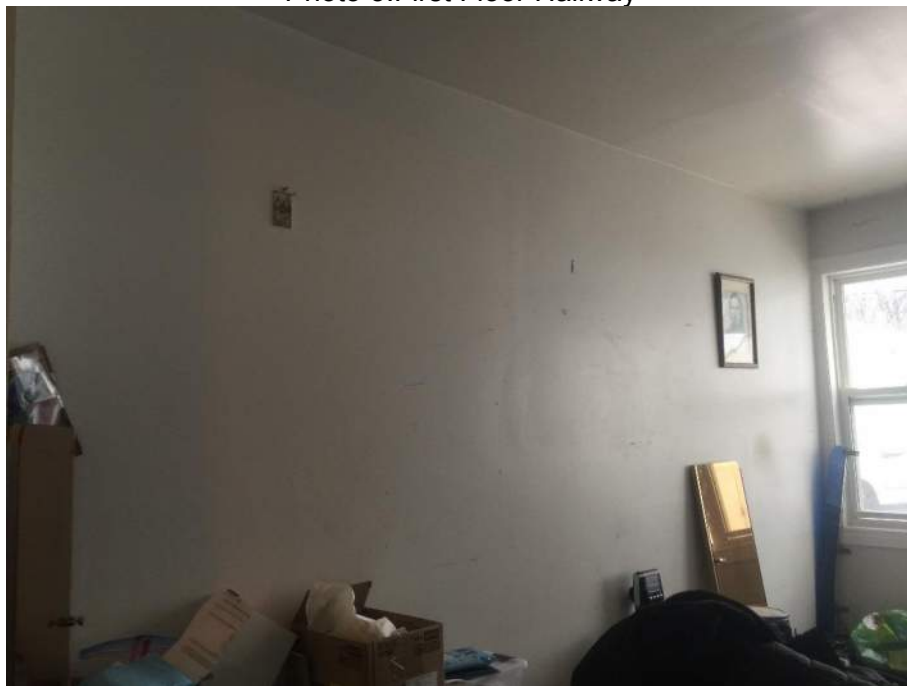


Photo 4. Suite 2 Main Floor.



Date Taken: Nov. 30, 2016

Client: City of Winnipeg

Taken by: CBaldwin

Location: Winnipeg, MB

Project No.: 5516057



Photo 5. Room 3, Main Hallway, blue paint under wall paper.



Photo 6. Second floor hallway, acoustic tiles.



Date Taken: Nov. 30, 2016

Client: City of Winnipeg

Taken by: CBaldwin

Location: Winnipeg, MB

Project No.: 5516057

Appendix C

CERTIFICATES OF ANALYSIS



MMM Group Ltd.
ATTN: Carolyn Baldwin
1600 buffalo place
Winnipeg MB R3B 3B1

Date Received: 30-NOV-16
Report Date: 07-DEC-16 14:18 (MT)
Version: FINAL

Client Phone: 204-477-6650

Certificate of Analysis

Lab Work Order #: L1864612
Project P.O. #: NOT SUBMITTED
Job Reference: 5516057
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	MU	Qualifier*	D.L.	Units	Bias	Extracted	Analyzed	Batch
L1864612-13 PNT-RM3-01-A Sampled By: CB on 30-NOV-16 @ 13:00 Matrix: Bulk Metals Lead (Pb)	242	+/-47		0.20	mg/kg	0	05-DEC-16	05-DEC-16	R3611174
L1864612-14 PNT-RM3-01-B Sampled By: CB on 30-NOV-16 @ 13:00 Matrix: Bulk Lead In Paint Metals Lead (Pb)	230	+/-45		0.20	mg/kg	0	05-DEC-16	05-DEC-16	R3611174
L1864612-15 PNT-RM3-01-C Sampled By: CB on 30-NOV-16 @ 13:00 Matrix: Bulk Lead In Paint Metals Lead (Pb)	213	+/-41		0.20	mg/kg	0	05-DEC-16	05-DEC-16	R3611174
* Refer to Referenced Information for Qualifiers (if any) and Methodology.									

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLIS	Detection Limit Adjusted: Insufficient Sample

Test Method References:

ALS Test Code	Matrix	Test Description	Preparation Method Reference	Method Reference**
ASBESTOS-PTCT-WP	Bulk	Quantitation of asbestos by point count		EPA/600/R-93/116
Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.				
Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e.floor tiles).				
ASBESTOS-WP	Bulk	Bulk Asbestos Content		NIOSH 9002-Polarized Light Microscopy
Bulk samples are examined under a stereoscopic microscope. Individual fibers or fibre bundles are mounted in refractive index liquids and are observed under a polarized light microscope with a special dispersion staining objective. The dispersion staining colours are compared to reference samples of known asbestiforms.				
Polarized microscopy is not a definitive technique for negative results for non-friable organically bound material (i.e.floor tiles).				
MET-200.2-MS-WP	Soil	Metals		EPA 200.2/6020A
Samples for analysis are homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested by block digester (EPA 200.2). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).				
Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.				

** The indicated Method Reference is the closest nationally or internationally recognized reference for the applicable ALS test method. ALS methods may incorporate modifications from the specified reference to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surr - Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

MU: Measurement Uncertainty. The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2 which gives a level of confidence of approximately 95%.

Bias: The reported method bias is the average long term deviation from the target value for a long term reference or control sample, measured in percent.

Zero values indicate no detectable method bias.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L1864612

Report Date: 07-DEC-16

Page 1 of 2

Client: MMM Group Ltd.
 1600 buffalo place
 Winnipeg MB R3B 3B1
 Contact: Carolyn Baldwin

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-MS-WP								
	Soil							
Batch	R3611174							
WG2446274-3	CRM	CANMET TILL-1						
Lead (Pb)			92.7		%		70-130	05-DEC-16
WG2446274-4	CRM	PACS-3						
Lead (Pb)			95.7		%		70-130	05-DEC-16
WG2446274-6	DUP	WG2446274-5						
Lead (Pb)		512	520		mg/kg	1.6	40	05-DEC-16
WG2446274-2	LCS							
Lead (Pb)			102.2		%		80-120	05-DEC-16
WG2446274-1	MB							
Lead (Pb)			<0.20		mg/kg		0.2	05-DEC-16

Quality Control Report

Workorder: L1864612

Report Date: 07-DEC-16

Client: MMM Group Ltd.
1600 buffalo place
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Contact: Carolyn Baldwin

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1864612-COFC

COC Number: 14 -

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L1864612

Report To		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)											
Company: WSP		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)											
Contact: Carolyn Baldwin		Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT											
Address: 1600 Buffalo Place, Winnipeg		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											
Phone: 204-477-6650		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge											
		Email 1 or Fax BaldwinC@mmm.ca			Specify Date Required for E2,E or P:											
		Email 2			Analysis Request											
Invoice To		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
Same as Report To <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX														
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax accountspayable@mmm.ca														
Company: MMM Group		Email 2														
Contact: Accounts Payable																
Project Information		Oil and Gas Required Fields (client use)														
ALS Quote #:		Approver ID:		Cost Center:												
Job #: 5516057		GL Account:		Routing Code:												
PO / AFE:		Activity Code:														
LSD:		Location:														
ALS Lab Work Order # (lab use only)		ALS Contact: Judy D		Sampler: CBaldwin												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Asbestos: Detection Limit 1.0%	Asbestos: Detection Limit 0.1% (Point count)	Lead (In paint)							Number of Containers
1	PTR - RM3 - 01 - A			30-11-2016	13:00	BULK	X	X								1
2	PTR - RM3 - 01 - B			30-11-2016	13:00		X									1
3	PTR - RM3 - 01 - C			30-11-2016	13:00		X									1
4	ACT - RM4 - 01 - A			30-11-2016	13:00		X									1
5	ACT - RM4 - 01 - B			30-11-2016	13:00		X									1
6	ACT - RM4 - 01 - C			30-11-2016	13:00		X									1
7	VFT - RM2 - 01 - A			30-11-2016	13:00		X									1
8	VFT - RM2 - 01 - B			30-11-2016	13:00		X									1
9	VFT - RM2 - 01 - C			30-11-2016	13:00		X									1
10	PNT - RM2 - 01 - A			30-11-2016	13:00			X								1
11	PNT - RM2 - 01 - B			30-11-2016	13:00			X								1
12	PNT - RM2 - 01 - C			30-11-2016	13:00			X								1
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report (client Use)			SAMPLE CONDITION AS RECEIVED (lab use only)											
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input type="checkbox"/> No					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No					Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
					Cooling Initiated <input type="checkbox"/>											
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C						
					17'											
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)										
Released by:		Date:	Time:	Received by:		Date:	Time:	Received by:		Date:	Time:					
				B		30-11-16	15:40									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

HA-734-0325a v09 Printed January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1864612-COFC

COC Number: 14 -

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Report To		Report Format / Distribution			Turnaround Time (TAT) is not available for all tests											
Company: WSP		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> XCEL <input type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)											
Contact: Carolyn Baldwin		Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT											
Address: 1600 Buffalo Place, Winnipeg		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											
Phone: 204-477-6650		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge											
		Email 1 or Fax BaldwinC@mmm.ca			Specify Date Required for E2,E or P:											
		Email 2			Analysis Request											
Invoice To Same as Report To <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX														
Company: MMM Group		Email 1 or Fax accountspayable@mmm.ca														
Contact: Accounts Payable		Email 2														
Project Information		Oil and Gas Required Fields (client use)														
ALS Quote #:		Approver ID:		Cost Center:												
Job #: 5516057		GL Account:		Routing Code:												
PO / AFE:		Activity Code:														
LSD:		Location:														
ALS Lab Work Order # (lab use only)		ALS Contact: Judy D		Sampler: CBaldwin												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers									
13	PNT-RM3-01-A			30-11-2016	13:00	Bulk	1									
14	PNT-RM3-01-B			30-11-2016	13:00	I	1									
15	PNT-RM3-01-C			30-11-2016	13:00	I	1									
Drinking Water (DW) Samples ¹ (client use)		Special Instructions / Specify Criteria to add on report (client Use)			SAMPLE CONDITION AS RECEIVED (lab use only)											
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input type="checkbox"/> No					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No					Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
					Cooling Initiated <input type="checkbox"/>											
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C						
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)								
Released by:		Date:	Time:	Received by:		Date:	Time:	Received by:		Date:	Time:					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-01256 v00 Print04 January 2014

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Appendix D

LEAD BASE PAINT SPECIFICATIONS

1 General

1.01 SUMMARY

.1 Comply with requirements of this Section when performing following Work at the 566 Brandon Avenue:

.1 Removal of lead-containing paint from Suites 1 and 2 main floor and Suites 3 and 4 second floor – approximately Suite 1 77 m2, Suite 2 71m2, Suite 3 78m2 and Suite 4 74m2;

as indicated in the accompanying Hazardous Materials Report, 566 Brandon Avenue, Winnipeg, Manitoba dated December 2016 (“Report”).

1.02 REFERENCES

.1 Department of Justice Canada

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.3 Human Resources and Social Development Canada (HRSDC)

.1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.

.4 Transport Canada (TC)

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

.5 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.1 Lead in Construction Regulation - 29 CFR 1926.62-[1993].

1.03 WORKER PROTECTION

.1 Before commencing work, instruct workers in the hazards of lead, all aspects of the work procedures and protective measures required.

.2 Provide workers with necessary protective clothing, including respirators, if required.

.3 Conduct air monitoring as required in the work area to document working conditions.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide proof satisfactory to City of Winnipeg Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.

- .2 Quality Control:
 - .1 Provide City of Winnipeg Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
 - .2 Provide proof satisfactory to City of Winnipeg Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

1.05 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste from recyclable materials for reuse and recycling
- .2 Handle and dispose of hazardous materials in accordance with applicable regulations.
- .3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.
- .4 Provide Consultant with identification of any receiving sites for recycled material

1.06 EXISTING CONDITIONS

- .1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are found in this Abatement Plan.
- .2 Notify City of Winnipeg Representative and/or Consultant of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by City of Winnipeg Representative.

1.07 PERSONNEL TRAINING

- .1 Provide City of Winnipeg Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.
- .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.

2 Products

2.01 MATERIALS

- .1 Selection of equipment and materials is the responsibility of the Contractor.

3 Execution

3.01 SUPERVISION

- .1 One Supervisor for every ten workers is required.
- .2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

3.02 PREPARATION

- .1 Identify Work Areas where there is a potential for lead to be present and separate the work areas with temporary barriers to prevent access to unprotected and untrained individuals.
- .2 Remove non-lead based paint surfaces, fixtures and objects from the Work Areas to limit the potential for lead dust to be entrained in these materials.
- .3 Inspect the Work Area regularly and maintain barriers until abatement is completed in the Work Area.
- .4 Remove and store items to be salvaged or reused.
 - .1 Protect and wrap items and transport and store in area specified by City of Winnipeg Representative.
- .5 Do not start work until:
 - .1 Arrangements have been made for disposal of waste.
 - .2 Tools, equipment, and materials waste containers are on site.
 - .3 Arrangements have been made for building security.
 - .4 Notifications have been completed and preparatory steps have been taken.

3.03 LEAD ABATEMENT

- .1 Where lead is present in building materials, remove the paint layer using a method that does not generate dust, or if not possible, control against the release of dust.
- .2 Remove lead based paint coated surfaces from Site. The Contractor will consult with City of Winnipeg on the salvage or disposal of this material.
- .3 Collect any lead residue in a manner that complies with all Provincial regulations

3.04 INSPECTION

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by City of Winnipeg Representative and/or Consultant will result in work stoppage, at no cost to Owner.
- .2 City of Winnipeg Representative and/or Consultant will inspect work for:
 - .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.05 FINAL CLEANUP

- .1 Following cleaning, proceed with final cleanup.
- .2 Remove all waste materials from the area, and dispose in accordance with Provincial regulations.
- .3 Dismantle the barriers.

END OF SECTION