



January 11, 2017

1059BB-16-001

**Wildstone Group of Companies**  
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**SENT VIA E-MAIL**

Room Numbers in this report have been altered to reflect the Map as displayed on the last page of the report. rooms adjacent to the cold pool have not been corrected against an alternate layout.

Attention: Chris Kroening

**RE: HAZARDOUS MATERIALS ASSESSMENT RADIUM HOT POOLS LOCKER ROOMS**

Dear Mr. Kroening,

Further to your request, EHS Partnerships Ltd. (EHS<sup>P</sup>) has completed a hazardous material assessment of the Women's Locker Rooms and the rooms adjacent to the cold pool access at the Radium Hot Pools (Project Area). The Project Area consists of the women's locker room (room ~~100 to 105~~) and the rooms adjacent to the cold pool entrance (rooms 107 – 116). The assessment was conducted on December 19, 2016, by Jon Ernst, B.Sc., B.A., Project Manager for EHS Partnerships Ltd. 105-107

## **SCOPE OF WORK**

The assessment was completed to determine the presence of hazardous materials, including asbestos-containing materials (ACM), lead-based paint, polychlorinated biphenyls (PCB), mercury, ozone-depleting substances (ODS), and miscellaneous chemicals.

## **REGULATIONS AND GUIDELINES**

### **PROVINCIAL OCCUPATIONAL HEALTH AND SAFETY REGULATIONS**

Provincial workplace health and safety is regulated in British Columbia by WorkSafe BC (formerly the Workers' Compensation Board of British Columbia) under the Workers' Compensation Act (the Act), as amended by the Workers' Compensation (Occupational Health and Safety) Amendment Act (effective October 1, 1999). The Act and related Regulations and Guidelines define the general duties and obligations of the employer, employees and others at the workplace.

Specifically, section 5.54 of the British Columbia Workers Compensation Act and the Occupational Health and Safety Regulations (OHSR) defines the requirement to develop an exposure control plan when a worker may be exposed to a hazardous substance at a concentration above 50% of its exposure limit.

### **ENVIRONMENTAL REGULATIONS**

In British Columbia, environmental matters pertaining to waste generally fall under the jurisdiction of the British Columbia Ministry of Environment (MoE), pursuant to the British Columbia Environmental Management Act (EMA). The waste regulation under the EMA relating to the disposal of hazardous

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building materials is the Hazardous Waste Regulation (HWR), BC Regulation 63/88, as amended by BC Reg. 63/2009.

The HWR refers to the handling, storage, transportation, treatment, recycling and disposal of special wastes in the province. The regulation outlines the materials and criteria to be used to characterize waste as hazardous.

### **Asbestos-Containing Materials (ACM)**

Asbestos-containing materials and lead-based paints are regulated by the Act under Part 6 of OHSR (BC Reg.) 296/97, as amended by BC Reg. 199/2014.

WorkSafe BC has published Safe Work Practices for Handling Asbestos, 2012. This manual outlines basic information on asbestos and asbestos products, health hazard requirements for worker protection, safe work procedures and principles that should be followed when developing exposure control plans and selecting the most suitable technique for the safe abatement of asbestos-containing materials. This document provides a guide to current practices that are to be followed in the Province of British Columbia.

### **Lead-Based Paint (LBP) Regulations**

Presently there are no regulations in British Columbia specifically addressing lead levels in paint. However, employers, general construction contractors and trade contractors have the duty under the OHSR to protect workers from exposure to lead. Under Canadian Federal Law, paints containing greater than 90 ppm lead are considered lead-containing paint. However, this is a value to keep the lead concentration in surface coatings as low as possible and should not be confused with health based standards which correlates to acceptable blood lead levels.

When disturbing lead based paint, it is applicable to use the regulations set by the U.S. Department of Housing and Urban Development (HUD). HUD classifies lead-based paint as any paint application containing at least 1.0 milligram of lead per square centimeter of surface area (mg/cm<sup>2</sup>), or 5000 ppm lead by weight, tested by chemical analysis. Further studies conducted by the U.S. Occupational Safety and Health Association (OSHA) have been done on the removal of materials with lead based paints. Improper removal techniques of lead-based paints containing greater than 600 ppm have been shown in these studies to exceed 50% of the Occupational Exposure Limit (OEL) of airborne lead particulate. As per section 6.60 of the OHSR and the Lead-Containing Paints and Coatings Guidelines, (2011), an exposure control plan must be implemented when impacting paints containing greater than 600 ppm lead

The Lead-Containing Paints and Coatings Guidelines (2011), published by Worksafe BC provides additional information on the development of effective exposure control plans for various tasks that involve impacting lead-based paints.

The British Columbia Environmental Management Act – Hazardous Waste Regulations [B.C. Reg. 63/88 inc. amendments to Reg 179/2016] (HWR) are regulations set out to protect the environment from hazardous materials. The present requirement under HWR is to prevent the release of lead into the environment. Disposal of leachable lead-based products is outlined in the Lead-Containing Paints and Coatings Guidelines, issued by Work Safe BC. Table 1 of the HWR classifies leachable lead-based products as any application containing at least 5.0 milligrams of leachable lead per Litre (mg/L), tested by TCLP analysis.

### **Polychlorinated Biphenyl's (PCBs)**

The PCB Regulations SOR/2008-273 came into force on September 5, 2008. The purpose of the regulations is to improve the protection of Canada's environment and the health of Canadians by minimizing the risks posed by the use, storage and release of PCBs and by accelerating the elimination of these substances. The Regulations also set out end-of-use and end-of-storage dates for PCBs. These dates are listed in Environment Canada's fact sheet, "PCB Regulations: An Overview."

### **Mercury-Containing Materials**

Mercury is commonly found in buildings in fluorescent light tubes, electrical switches and instruments such as mercury vapour lamps, thermostats, barometers, manometers, and thermometers. Mercury in fluorescent light tubes and drained, broken, or obsolete instruments that contained mercury are not considered hazardous waste according to the EMA. The Recycling Council of British Columbia provides a listing of approved recycling facilities for the disposal of hazardous materials.

Mercury or mercury vapour in light fixtures or thermostats poses no risk to workers or occupants provided the mercury containers remain intact and undisturbed. If renovations or demolition impact any mercury-containing materials or equipment they must be removed, handled and disposed in accordance with EMA.

### **Ozone Depleting Substances (ODS) Regulations**

Provincial regulatory framework providing the requirements for the safe management, storage and disposal of ODSs is provided in the Ozone-Depleting Substances and Other Halocarbons Regulation, including amendments up to BC Regulation 317/2012, respecting the appropriate management of ODSs within the province of British Columbia. Schedule A in the regulation lists all ozone-depleting refrigerant types.

In 1994, the federal government filed the Ozone-Depleting Substances Regulations to amend controls on the production and consumption of chlorofluorocarbons (CFCs), halons, tetrachloride and methyl chloroform. The Federal Halocarbon Regulations, effective July 1, 1999, was filed to ensure uniformity with respect to the release, recovery and recycling of ODSs and their halocarbon alternatives in refrigeration and air conditioning equipment throughout the provinces of Canada. The Code of Practice for the Reduction of CFC Emissions from Refrigeration and Air Conditioning Systems (1989) provides Best Practice recommendations for the handling, storage, and disposal of such materials.

### **Miscellaneous Chemicals**

Miscellaneous chemicals are found in many buildings and are typically part of the day to day building operations. All miscellaneous chemicals that are controlled products must be handled in accordance with the Workplace Hazardous Materials Information System (WHMIS) and following the recommendations in the MSDS. Prior to renovations or demolition, any miscellaneous chemicals that may be impacted must be transported and disposed in accordance with Transportation of Dangerous Goods (TDG) regulations and HWR regulations.

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## **TRANSPORTATION REGULATIONS**

The transportation of hazardous wastes is governed under the Federal Transportation of Dangerous Goods Act and Regulations that outline the requirements for storage, handling, and transportation of such waste.

## **METHODOLOGY**

When sampling for hazardous building materials, room names and numbers were assigned by EHS<sup>P</sup> to ensure continuity and accuracy of information compiled during the survey.

All work was conducted in accordance with standards outlined by WorkSafe BC, and the National Institute for Occupational Safety and Health (NIOSH).

### **Asbestos-Containing Materials**

The survey was completed to determine the extent of ACM within the Project Area. The survey was completed on a room-by-room basis to provide a complete inventory of Project Area. The systems which were reviewed included, but were not limited to:

- Structural - systems including fireproofing on beams, open and solid webbed joist systems, Q-deck; asbestos-containing spray-applied insulation;
- Mechanical - systems insulation including hot water and steam system, condensate system, chilled water system, glycol system, domestic hot and cold water, emergency generator exhaust, boiler units, heat exchangers, reboiler units, and asbestos cement piping, asbestos-containing mechanical insulation. During the assessment the Project Area was visually inspected for the presence of asbestos cement pipe and wall board; and
- Architectural - systems including texture coats, sheet flooring, vinyl floor tile, acoustical spray-applied materials, condensation control applications, ceiling tile, wall board, drywall joint compound, asbestos sheet products.

Systematic sampling of identified suspect ACM was conducted as part of the assessment. The asbestos samples were analyzed for asbestos type and percentage content using Polarized Light Microscopy in accordance with National Institute for Occupational Safety and Health (NIOSH) methodologies and United States Environmental Protection Agency dispersion staining techniques (EPA/600/R-93/116).

### **Lead-Based Paint**

Testing for lead-based paint was conducted by collecting bulk samples of the suspect material and submitting to EMSL Analytical Inc. (EMSL). Typically finished interior and exterior painted surfaces were tested for the presence of lead paint. Samples from each colour, material were submitted for analysis. Results are reported as parts per million (ppm).

### **Polychlorinated Biphenyls**

PCBs have not been used in light capacitors since July 1980 and in many cases since 1978. During the survey limited fluorescent light ballasts were inspected and compared to the criteria found in the

Environment Canada, Report EPS 2/CC/2 (revised) August 1991, "Identification of Lamp Ballasts Containing PCBs to Assess Their Likelihood of Being PCB-Containing".

### Mercury-Containing Materials

During the survey, the Project Area was visually assessed for the presence of mercury-containing fluorescent light tubes and thermostats.

### Ozone Depleting Substances (ODS)

During the survey, the Project Area was visually assessed for the presence of air conditioning units, water coolers, and refrigerators.

### Miscellaneous Chemicals

During the survey, the Project Area was visually assessed for the presence of miscellaneous chemicals.

## RESULTS AND OBSERVATIONS

### Asbestos-Containing Materials

Twenty-four (24) samples of building materials were collected and submitted with a chain of custody for analysis. Table 1: Results of Asbestos Analysis, details the results of the survey. The laboratory report is attached in Appendix I.

**Table 1: Results of Asbestos Analysis**

<b>Sample Number</b>	<b>Location</b>	<b>Sample Description</b>	<b>Asbestos Type and Percent</b>
A8a	Room 113	Floor Tile Grout (1"x1" Beige & Brown)	None Detected
<b>A8b</b>	<b>Room 113</b>	<b>Floor Tile Thin Set Mortar / Leveler (1"x1" Beige &amp; Brown)</b>	<b>Chrysotile, 2%</b>
A9a	Room 113	Floor Tile Grout (4" Brick)	None Detected
A9b	Room 113	Floor Tile Thin Set Mortar (4" Brick)	None Detected
A10	Room 113	Beige Window Caulking	None Detected
<b>A11</b>	<b>Room 113</b>	<b>Grey Window Putty</b>	<b>Chrysotile, 5%</b>
A12	Room 115	Drywall Joint Compound	None Detected
<b>A13a</b>	<b>Room 115</b>	<b>Plaster Skim &amp; Texture</b>	<b>Chrysotile, 2%</b>
A13b	Room 115	Plaster Base Coat	None Detected

**Table 1: Results of Asbestos Analysis**

<b>Sample Number</b>	<b>Location</b>	<b>Sample Description</b>	<b>Asbestos Type and Percent</b>
A14a	Room 115	Tile Grout (Offwhite tile)	None Detected
A14b	Room 115	Tile Adhesive (Offwhite tile)	None Detected
A15	Room 115	Ceiling Tile 2' x 4'	None Detected
A16a	Room 109	Plaster Skim Coat	None Detected
A16b	Room 109	Plaster Base Coat	None Detected
A17	Room 111	Ceiling Tile 2' x 4'	None Detected
A18	Room 111	Textured Plaster Ceiling Above Ceiling Tile	None Detected
A19	East Washrooms	Drywall Joint Compound	None Detected
A20	East Washrooms	Beige Window Caulking	None Detected
A21	Room 100 Ceiling Space	Cellulose Spray Insulation	None Detected
A22	Room <del>100</del> 107	Tile Grout and Adhesive	None Detected
A23a	Room <del>101</del> 105	Plaster Skim Coat	None Detected
A23b	Room <del>101</del> 105	Plaster Base Coat	None Detected
A24a	Room <del>104</del> 105	Plaster Skim Coat	None Detected
<b>A24b</b>	<b>Room <del>104</del> 105</b>	<b>Plaster Base Coat</b>	<b>&lt;1% Actinolite</b>

In addition to the non-asbestos-containing materials identified in Table 1, other materials not suspected to contain asbestos were identified in the following locations:

- Date Coded Ceiling Tiles throughout the Project Area;
- New welded seam flooring throughout in the Project Area;
- Wood, cement, fibreglass, and metal building materials located on the floors, walls and ceilings throughout the Project Area.

A Photographic Log displaying the identified ACM is presented in Appendix II.

## Lead-Based Paint

Multiple samples of paint suspected to be lead-based were collected from typically finished interior and exterior surfaces of the Project Area and submitted with a chain of custody for analysis. Table 2: Results of Paint Analysis, details the results of the survey. A Photographic Log displaying the identified lead based paints is presented in Appendix II

**Table 2: Results of Paint Analysis**

Sample Number	Colour	Substrate	Location	Concentration (ppm)
Pb17	Green	Plaster Wall	Room 113	780
Pb18	Brown / Beige	Floor Tile Coating	Room 113	<90
Pb19	Yellow	Wood Door & Frame	Room 111	480
Pb26	Beige	Cinderblock Wall	Womans Locker Room 400	107 <90
Pb27	Beige	Plaster Wall	Womans Locker Room 401	105 <90
Pb28	White	Wall Tile	Womans Locker Room 400	107 <150

## Polychlorinated Biphenyls (PCB)

There were approximately 26 fluorescent light ballasts suspected to be PCB containing identified throughout the Project Area.

## Mercury

Approximately 52 fluorescent light tubes were identified in the Project Area.

## Ozone-Depleting Substances (ODS)

Devices suspected of containing ODS were not present at the time of the assessment

## Miscellaneous Chemicals

Various chemical that are used for standard building operations were identified throughout the Project Area.

## DISCUSSION

### Asbestos-Containing Materials

Four (4) of the twenty-four (24) samples collected in the Project Area were found to contain asbestos. The following ACM were identified:

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*Floor Tile Thin Set Mortar*

Two (2) samples of floor tile thin set mortar were collected and one (1) was found to contain asbestos. The floor tile thin set mortar present under the beige and brown 1”x1” tiles in rooms ~~100~~, and 108-114 should be treated as asbestos-containing. 107

*Window Putty*

One (1) sample of grey window putty was collected and found to contain asbestos. The grey window putty identified around exterior doors and windows in Room 116 should be treated as asbestos-containing.

*Plaster*

Three (3) composite samples of plaster were collected and two (2) were found to contain asbestos. The plaster throughout the Project Area should be treated as asbestos containing.

Care should be taken when opening previously inaccessible areas as these areas may contain additional ACM. If suspect materials are identified work should be stopped to allow the material to be tested.

**Lead-Based Paint**

One (1) of the six (6) lead samples were found to contain lead above 600 ppm. The following painted surfaces should be treated lead based:

- Green plaster walls throughout rooms 108 – 115

Note that several walls in rooms 108 – 115 showed evidence of being previously painted green.

**Polychlorinated Biphenyls (PCB)**

Suspect PCB-containing magnetic ballasts were identified throughout the Project Area.

**Mercury**

Fluorescent light tubes throughout the project area are suspected to contain mercury vapour.

**Ozone-Depleting Substances (ODS)**

ODS were not identified in the project area

**Miscellaneous Chemicals**

The chemicals identified throughout the area appeared to be properly stored for construction use.



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## CONCLUSIONS AND RECOMMENDATIONS

1. Prior to completing renovations or demolition, any asbestos containing materials that will be impacted must be encapsulated, enclosed or removed. If the ACM is to be removed. The ACM removal procedures include the following:

- Moderate-risk procedures must be followed to remove the asbestos-containing floor tile thin set mortar, plaster, and window putty in the Project Area as per WorkSafeBC's Safe Work Practices for Handling Asbestos, 2012.

Asbestos abatement should be completed by workers qualified in the removal of ACM. Throughout the abatement activities, appropriate air monitoring and inspections should be conducted by qualified personnel to demonstrate that work procedures are effective, asbestos is contained, and the waste is handled appropriately. It is recommended that a proper scope of work and asbestos removal specifications be developed that detail the complete and proper removal of identified ACM.

2. Building material containing lead based paint must be properly disposed of as per the Hazardous Waste Regulation (HWR). If the paint is to be removed and segregated from the waste stream, exposure control plans must be developed and followed to keep worker exposure as low as reasonably achievable by following the guidelines presented in WorkSafeBC's Lead-Containing Paints and Coatings Guideline, 2011.
3. Due to the age of the building there is a potential for PCB-containing ballasts to be located in the Project Area. To address the potential PCB-containing light ballasts that may be present, any fluorescent fixtures which are to be disposed of should be sorted, based on date of manufacture, on-site by qualified personnel. PCB-containing ballasts must be identified, barreled appropriately, and stockpiled on-site. Following removal of all fixtures, the barreled PCB-containing light ballasts must be appropriately labeled, manifested and transported to an approved destruction and disposal facility in accordance with the HWR.
4. Prior to renovations or demolition, stored chemicals should be handled and disposed of in accordance with their MSDS and applicable regulations.

## LIMITATIONS

The conclusions and recommendations contained in this assessment report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

1. The data and findings presented in this report are valid as of the dates of the investigations. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further exploration at the property, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.
2. The data reported and the findings, observations and conclusions expressed in this report are limited by the Scope of Work. The Scope of Work was defined by the request of the client, the time and budgetary constraints imposed by the client, and availability of access to the property.

3. Because of the limitations stated above, the findings, observations and conclusions expressed by EHS<sup>P</sup> in this report are not, and should not be, considered an opinion concerning compliance of any past or present owner or operator of the site with any federal, provincial or local laws or regulations.
4. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence at the time of investigation.
5. EHS<sup>P</sup> assessment reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial, or local governmental agencies. Any use of the assessment report constitutes acceptance of the limits of EHS<sup>P</sup>'s liability. EHS<sup>P</sup>'s liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.

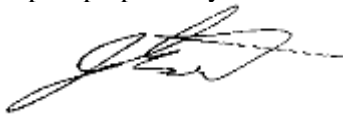
## CLOSURE

We trust the information presented in this report meets your requirements. If you have any questions please feel free to contact the undersigned at 403.243.0700. Thank you for the opportunity to be of service.

## EHS PARTNERSHIPS LTD.

*per:*

Report prepared by:



Jon Ernst, B.Sc., B.A.  
Project Manager

Report reviewed by:



Brad Burwash, B.A.Sc., CRSP  
Division Manager

**APPENDIX I**  
**LABORATORY RESULTS**



# EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

Tel/Fax: (403) 879-1149 / (403) 879-1152

<http://www.EMSL.com> / [CalgaryLab@EMSL.com](mailto:CalgaryLab@EMSL.com)

EMSL Canada Order: 651607459

Customer ID: 55EHSP25

Customer PO:

Project ID:

**Attention:** Jon Ernst  
EHS Partnerships  
4303 11th Street SE  
Calgary, AB T2G 4X1

**Phone:** (403) 605-9685

**Fax:**

**Received Date:** 12/21/2016 11:37 AM

**Analysis Date:** 12/21/2016 - 12/22/2016

**Collected Date:** 12/21/2016

**Project:** 1059BB16001

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
A1 <small>651607459-0001</small>	EXTERIOR CHIMNEY - BRICK MORTAR	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A2-Skim Coat <small>651607459-0002</small>	EXTERIOR COVERED PATIO - TEXTURED PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A2-Base Coat <small>651607459-0002A</small>	EXTERIOR COVERED PATIO - TEXTURED PLASTER	Beige Non-Fibrous Homogeneous		5% Quartz 93% Non-fibrous (Other)	2% Chrysotile
A3 <small>651607459-0003</small>	EXTERIOR FLAGSTONE WALL - MORATR	Gray Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
A4-Floor Tile <small>651607459-0004</small>	MAIN FLOOR JANITOR ROOM - SHEET FLOORING & PAPER	Red Non-Fibrous Homogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
A4-Mastic <small>651607459-0004A</small>	MAIN FLOOR JANITOR ROOM - SHEET FLOORING & PAPER	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A4-Paper Backing <small>651607459-0004B</small>	MAIN FLOOR JANITOR ROOM - SHEET FLOORING & PAPER	Beige Fibrous Homogeneous		50% Non-fibrous (Other)	50% Chrysotile
A5 <small>651607459-0005</small>	MAIN FLOOR JANITOR ROOM - MECHANICAL INSULATION	Beige Fibrous Homogeneous	15% Cellulose 20% Min. Wool	65% Non-fibrous (Other)	None Detected
A6 <small>651607459-0006</small>	MAIN FLOOR JANITOR ROOM - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
A7-Skim Coat <small>651607459-0007</small>	STAIRWELL - PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A7-Base Coat <small>651607459-0007A</small>	STAIRWELL - PLASTER	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A8-Grout <small>651607459-0008</small>	ROOM 113 - FLOOR TILE GROUT & ADHESIVE (1"X1" BEIGE & BROWN)	Gray Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
A8-Mortar <small>651607459-0008A</small>	ROOM 113 - FLOOR TILE GROUT & ADHESIVE (1"X1" BEIGE & BROWN)	Gray Non-Fibrous Homogeneous		10% Quartz 88% Non-fibrous (Other)	2% Chrysotile

Initial report from: 12/23/2016 12:35:37



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EMSL Canada Order: 651607459

Customer ID: 55EHSP25

Customer PO:

Project ID:

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
A9-Grout 651607459-0009	ROOM 113 - FLOOR TILE GROUT & ADHESIVE (4" BRICK)	Red Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A9-Mortar 651607459-0009A	ROOM 113 - FLOOR TILE GROUT & ADHESIVE (4" BRICK)	Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A10 651607459-0010	ROOM 113 - BEIGE WINDOW CAULKING	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A11 651607459-0011	ROOM 113 - GREY WINDOW PUTTY	Gray Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
A12 651607459-0012	ROOM 115 - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A13-Texture / Skim Coat 651607459-0013	ROOM 115 - PLASTER	White/Red Fibrous Homogeneous		3% Quartz 95% Non-fibrous (Other)	2% Chrysotile
<i>Sample layers combined prior to analysis at client's request.</i>					
A13-Base Coat 651607459-0013A	ROOM 115 - PLASTER	Beige Fibrous Homogeneous	<1% Hair	5% Quartz 95% Non-fibrous (Other)	None Detected
A14-Grout 651607459-0014	ROOM 115 - TILE GROUT & ADHESIVE (OFFWHITE TILE)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A14-Adhesive 651607459-0014A	ROOM 115 - TILE GROUT & ADHESIVE (OFFWHITE TILE)	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A15 651607459-0015	ROOM 115 - CEILING TILE 2'X4'	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (Other)	None Detected
A16-Skim Coat 651607459-0016	ROOM 109 - PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A16-Base Coat 651607459-0016A	ROOM 109 - PLASTER	Beige Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
A17 651607459-0017	ROOM 111 - CEILING TILE 2'X4'	Gray Fibrous Homogeneous	60% Min. Wool	40% Non-fibrous (Other)	None Detected
A18 651607459-0018	ROOM 111 - TEXTURED PLASTER CEILING ABOVE CT	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A19 651607459-0019	EAST WASHROOMS - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
A20 651607459-0020	EAST WASHROOMS - BEIGE WINDOW CAULKING	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A21 651607459-0021	ROOM 100 CEILING SPACE - CELLULOSE SPRAY INSULATION	Gray Fibrous Homogeneous	80% Min. Wool	20% Non-fibrous (Other)	None Detected

Initial report from: 12/23/2016 12:35:37



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EMSL Canada Order: 651607459

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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
A22 651607459-0022	ROOM 100 - TILE GROUT AND ADHESIVE	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A23-Skim Coat 651607459-0023	ROOM 101 - PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A23-Base Coat 651607459-0023A	ROOM 101 - PLASTER	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A24-Skim Coat 651607459-0024	ROOM 104 - PLASTER	White Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
A24-Base Coat 651607459-0024A	ROOM 104 - PLASTER	Beige Fibrous Homogeneous		20% Vermiculite 80% Non-fibrous (Other)	<1% Actinolite
A25 651607459-0025	LAUNDRY ROOM GLYCOL SUPPLY - MECHANICAL INSUALTION	Beige Fibrous Homogeneous	10% Cellulose 40% Min. Wool	50% Non-fibrous (Other)	None Detected
A26 651607459-0026	LAUNDRY ROOM BULKHEAD & COLUMN - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
A27-Skim Coat 651607459-0027	LAUNDRY ROOM - TEXTURED PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A27-Base Coat 651607459-0027A	LAUNDRY ROOM - TEXTURED PLASTER	Gray Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A28 651607459-0028	LAUNDRY ROOM DRYER EXHAUST - DUCT JOINT MASTIC BROWN	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A29 651607459-0029	GLYCOL ROOM HEAT EXCHANGER - MECHANICAL INSULATION	Beige Fibrous Homogeneous	10% Cellulose 20% Min. Wool	70% Non-fibrous (Other)	None Detected
A30 651607459-0030	GLYCOL ROOM HEAT EXCHANGER - GASKET	White/Black Fibrous Homogeneous		60% Non-fibrous (Other)	40% Chrysotile
A31 651607459-0031	GLYCOL ROOM DHWS - MECHANICAL INSULATION	Beige Fibrous Homogeneous	10% Cellulose 20% Min. Wool	70% Non-fibrous (Other)	None Detected
A32 651607459-0032	GLYCOL ROOM DHW TANK - GASKET	White/Black Fibrous Homogeneous		60% Non-fibrous (Other)	40% Chrysotile
A33 651607459-0033	GLYCOL ROOM DHW TANK - MECHANICAL INSULATION	Beige Fibrous Homogeneous	15% Min. Wool	55% Non-fibrous (Other)	30% Chrysotile
A34 651607459-0034	GLYCOL ROOM BOILER 1 EXHAUST - GASKET	White Fibrous Homogeneous		15% Non-fibrous (Other)	85% Chrysotile
A35 651607459-0035	GLYCOL ROOM BOILER 1 EXHAUST - INSULATION	White Fibrous Homogeneous	90% Min. Wool	10% Non-fibrous (Other)	None Detected

Initial report from: 12/23/2016 12:35:37



# EMSL Canada Inc.

2333 18th Avenue NE, Unit 48 Calgary, AB T2E 8T6

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EMSL Canada Order: 651607459

Customer ID: 55EHSP25

Customer PO:

Project ID:

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
A36 651607459-0036	GLYCOL ROOM PUMP P5 - RED GASKET	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A37 651607459-0037	GLYCOL ROOM PUMP P5 - MECHANICAL INSULATION	Beige Fibrous Homogeneous	10% Cellulose 20% Min. Wool	70% Non-fibrous (Other)	None Detected
A38 651607459-0038	GLYCOL ROOM VALVE V6 - MECHANICAL INSULATION	Beige Fibrous Homogeneous	10% Cellulose 20% Min. Wool	70% Non-fibrous (Other)	None Detected
A39 651607459-0039	GLYCOL ROOM BULKHEAD - DRYWALL JOINT COMPOUND	White Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
A40 651607459-0040	FAN ROOM - SPRAY INSULATION	Beige Fibrous Homogeneous	15% Cellulose	20% Vermiculite 65% Non-fibrous (Other)	None Detected
A41 651607459-0041	FAN ROOM - DUCT JOINT MASTIC GREY	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A42 651607459-0042	FAN ROOM - DRYWALL JOINT COMPOUND	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Leanne Roy (54)

Jefferson Salvador, Laboratory Manager  
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Canada Inc. Calgary, AB NVLAP Lab Code 500100-0

Initial report from: 12/23/2016 12:35:37

**EMSL Canada Inc.**

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EMSL Canada Or	551613617
CustomerID:	55EHSP25
CustomerPO:	1059BB-16-001
ProjectID:	

Attn: **Jon Ernst**  
**EHS Partnerships**  
**4303 11th Street SE**  
**Calgary, AB T2G 4X1**

Phone: (403) 243-0700  
 Fax:  
 Received: 12/22/16 12:18 PM  
 Collected:

Project: 1059BB-16-001

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

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
Pb1 Site: Grey floor - laundry room	551613617-0001	12/22/2016		3200 ppm
Pb2 Site: Grey floor- glycol room	551613617-0002	12/22/2016		2000 ppm
Pb3 Site: Yellow flooring- fan room	551613617-0003	12/22/2016		61000 ppm
Pb4 Site: Brown beams- fan room Insufficient sample to reach reporting limit.	551613617-0004	12/22/2016		<220 ppm
Pb5 Site: Yellow paint- laundry room	551613617-0005	12/22/2016		34000 ppm
Pb6 Site: Grey cabinet- laundry room	551613617-0006	12/22/2016		640 ppm
Pb7 Site: White cinderblock- laundry room	551613617-0007	12/22/2016		1100 ppm
Pb8 Site: Beige paint- laundry room	551613617-0008	12/22/2016		<90 ppm
Pb9 Site: Green paint- glycol room Insufficient sample to reach reporting limit.	551613617-0009	12/22/2016		<590 ppm
Pb10 Site: Grey door & frame- fan room	551613617-0010	12/22/2016		7700 ppm
Pb11 Site: White fire door- glycol room	551613617-0011	12/22/2016		3000 ppm
Pb12 Site: Green paint on concrete- fan room	551613617-0012	12/22/2016		1600 ppm
Pb13 Site: Green paint- laundry room	551613617-0013	12/22/2016		<90 ppm
Pb14 Site: White drywall paint- laundry room	551613617-0014	12/22/2016		1500 ppm

Rowena Fanto, Lead Supervisor  
 or other approved signatory

\*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 12/23/2016 08:41:12



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

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
Pb15	551613617-0015	12/22/2016		<120 ppm
Site: Grey/green paint- room 114 - storage Insufficient sample to reach reporting limit.				
Pb16	551613617-0016	12/22/2016		700 ppm
Site: Beige wall- room 114 - storage				
Pb17	551613617-0017	12/22/2016		780 ppm
Site: Green plaster- room 113 - storage				
Pb18	551613617-0018	12/22/2016		<90 ppm
Site: Brown/beige floor tile- storage				
Pb19	551613617-0019	12/22/2016		480 ppm
Site: Yellow door- room 111 - storage				
Pb20	551613617-0020	12/22/2016		470 ppm
Site: White door/door frame- Café area				
Pb21	551613617-0021	12/22/2016		960 ppm
Site: Grey door & frame- Café area hall				
Pb22	551613617-0022	12/22/2016		280 ppm
Site: White drywall paint- Café area hall Janitor room				
Pb23	551613617-0023	12/22/2016		680 ppm
Site: Green/white window frame- Café area				
Pb24	551613617-0024	12/22/2016		6100 ppm
Site: White door frame- Café area Janitor room				
Pb25	551613617-0025	12/22/2016		21000 ppm
Site: Grey/green door- Café area Janitor room				
Pb26	551613617-0026	12/22/2016		<90 ppm
Site: Beige cinderblock- Women's Locker 1100				
Pb27	551613617-0027	12/22/2016		<90 ppm
Site: Beige paint- Women's Locker 101				
Pb28	551613617-0028	12/22/2016		<150 ppm
Site: White tile- Women's Locker 100 Insufficient sample to reach reporting limit.				

Rowena Fanto, Lead Supervisor  
 or other approved signatory

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

<i>Client Sample Description</i>	<i>Lab ID</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Lead Concentration</i>
Pb29	551613617-0029		12/22/2016	<90 ppm
Site: White ceiling- Patio exterior				

Rowena Fanto, Lead Supervisor  
or other approved signatory

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**APPENDIX II**  
**PHOTOGRAPHIC LOG**



**Photograph #1 – Asbestos-Containing Tile Thin Set Mortar under Brown & Beige Tiles – Room 113 (Sample A8b)**



**Photograph #2 – Asbestos-Containing Tile Thin Set Mortar under Brown & Beige Tiles – Room 100 107 (Reference Sample A8b)**



**Photograph #3 – Asbestos-Containing Grey Window Putty – Exterior Door Room 116 (Sample A11).**



**Photograph #4 – Asbestos-Containing Plaster Skim Coat – Room 115 (Sample A13a).**



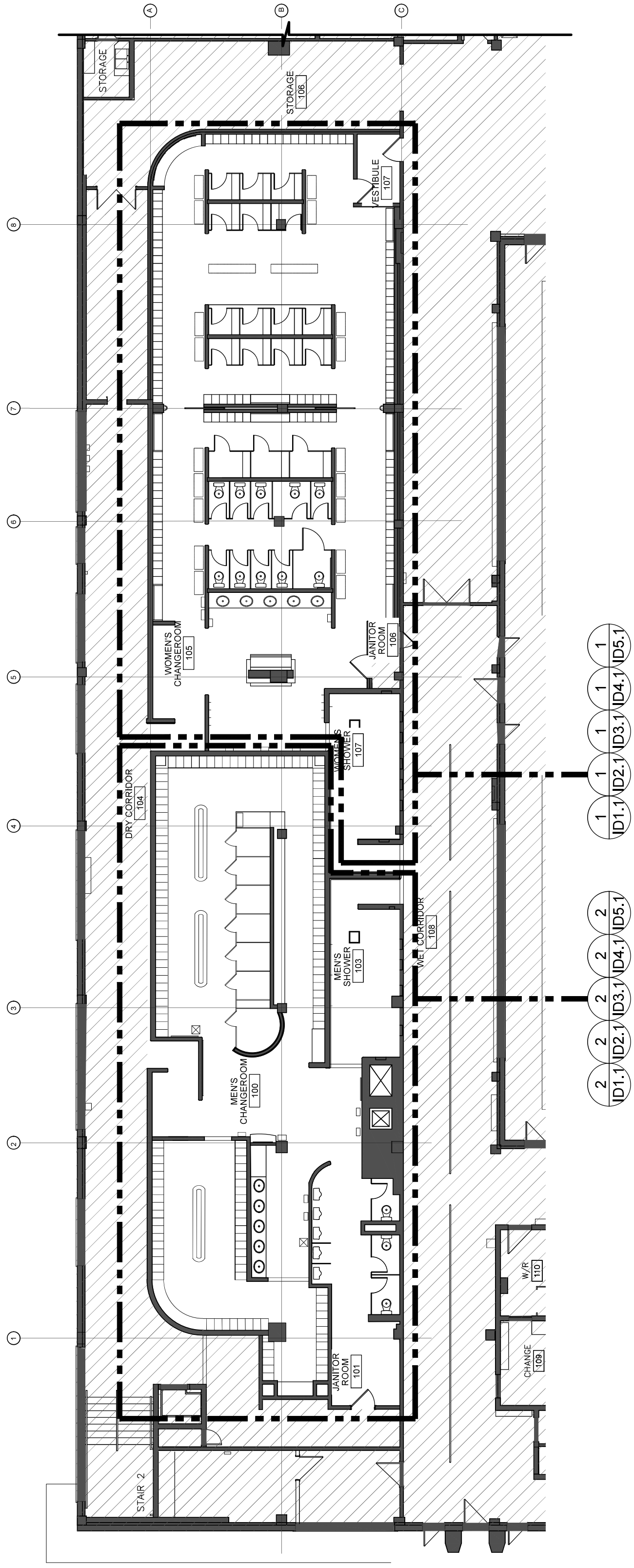
Photograph #5 – Asbestos-Containing Plaster Base Coat – Column Room ~~104~~<sup>105</sup> (Sample A24b).



Photograph #6 – Lead-Based Green Paint on Plaster Wall (Sample Pb17).



**Photograph #7 – Example of Lead-Based Green Paint Under Other Layers – Room 115**



HATCH DENOTES AREA  
NOT IN CONTRACT

**1** MAIN FLOOR KEYPLAN  
SCALE: 1:100

- 2 2 2 2 2  
 ID1.1 ID2.1 ID3.1 ID4.1 ID5.1
- 1 1 1 1 1  
 ID1.1 ID2.1 ID3.1 ID4.1 ID5.1