



**HAZARDOUS MATERIALS INVESTIGATION
GRIERSON CENTER
EDMONTON, ALBERTA**

EHS^P Project: 456BM-18-009

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EXECUTIVE SUMMARY

EHS Partnerships Ltd. (EHS^P) was retained by SLR Consulting (Canada) Ltd. (SLR) under Public Services Procurement Canada (PSPC) to conduct a hazardous materials assessment of two wheelchair lifts in Buildings 1 and 4 of the Grierson Center located at 9530 101 Ave, Edmonton, Alberta herein referred to as the Project Area. The assessment was conducted on October 1, 2018 by Lucas Sheptycki, Project Coordinator, under the general direction of Bill Martin, Operations Manager for EHS^P.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the survey, EHS^P makes the following conclusions and recommendations:

1. Prior to renovation activities, ACM must be handled as per the Alberta Occupational Health and Safety Regulations, 2009 and the Alberta Asbestos Abatement Manual. If additional materials not previously identified during the survey are identified during renovation, samples should be collected to identify potential ACM. If the material is to be removed the following procedures should be implemented:
 - low-risk procedures must be followed when handling the asbestos-containing mudding.
2. The current scope of work for the removal and replacement of the wheelchair lifts in buildings 1 and 4 indicates that there will be low impact into the asbestos containing mudding. If drilling into the mudding, installing conduit clips, or installing anchors is to be completed, low-risk procedures should be followed as per the Alberta Asbestos Abatement Manual. Specification for the work can be found in Appendix E: Specifications.
3. Disturbance of lead-based paint may result in exposure to lead, either by inhaling lead dust, or ingesting lead powder. Contamination can include contact with skin and clothing during the disturbance activities and workers must be aware of proper work procedures and health effects and have the appropriate personal protective equipment. It is expected that lead-based paints will be disturbed by work activities. Controls and procedures must be implemented to protect the workers from exposure to lead.
4. The current scope of work for the removal and replacement of the wheelchair lifts in buildings 1 and 4 indicates that there will be low impact into the lead-based paint. If work on the lead paint is to be completed, low-risk procedures should be followed. Specifications for the work can be found in Appendix E: Specifications.
5. Based on the age of the building PCB-containing light ballasts 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 fixtures 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 Alberta Environmental Act.
6. The fluorescent light tubes should be removed and recycled or disposed of in accordance with regulations specified by the Alberta Environmental Act., if they will be impacted by renovation or demolition activities.

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1.0 INTRODUCTION

1.1 Purpose

EHS Partnerships Ltd. (EHS^P) was retained by SLR Consulting (Canada) Ltd. (SLR) under Public Services Procurement Canada (PSPC) to conduct a hazardous materials assessment of two wheelchair lifts in Buildings 1 and 4 of the Grierson Center located at 9530 101 Ave, Edmonton, Alberta herein referred to as the Project Area. The assessment was conducted on October 1, 2018 by Lucas Sheptycki, Project Coordinator, under the general direction of Bill Martin, Operations Manager for EHS^P.

1.2 Scope of Work

The scope of work for the assessment included the following:

- Submission of a health and safety plan to SLR for approval prior to mobilizing to site.
- Completion of a records review of all available hazmat reports, project specifications, and associated drawings.
- Completion of a hazmat survey within Building 1 – wheelchair 5-stop lift and Building 4 - wheelchair 2-stop lift. EHS^P determined the type, location, and extent of hazmat remaining within these work areas. The assessment determined the presence of hazardous materials including, asbestos-containing materials (ACM), lead-based paint, lead sheeting, polychlorinated biphenyls (PCB) in fluorescent light ballasts, mercury in thermostats and pressure sensing devices, radioactive materials in devices, ozone-depleting substances (ODS) in items or systems such as air conditioning units, urea formaldehyde foam insulation (UFFI), visible mold, biohazards, and chemicals.
- Development of a survey report that documented findings and recommendations of the site survey inspections / sampling. The report documented any data gaps in the available surveys and reports, comment on the abatement activities conducted to date, and provide recommendations for oversight for the remainder of the project.
- EHS^P translated our findings from the hazmat survey phase to develop drawings, specifications, and cost estimates.

2.0 BACKGROUND INFORMATION

EHS^P conducted the assessments on behalf of SLR for PSPC. The survey consisted of investigations of two (2) stairwells within the Project Area. The list of surveyed buildings, including building area and construction dates, is provided below.

Building #	Building Name	Building Area (m ²)	Year of Construction	ACM Identified?	Lead Identified?
1	Grierson Center Building 1	885.04	1912	No	Yes
4	Grierson Center Building 2	1206.60	1912	Yes	Yes

3.0 REGULATIONS AND GUIDELINES

3.1 Federal Regulations and Guidelines

The *Canada Occupational Health and Safety Regulations (COHSR), Part X, Hazardous Substances* covers specific requirements related to the management and control of asbestos-containing materials (ACM). There are also specific requirements for hazard prevention detailed in the Hazard Prevention Program (HPP) in the CLC.

The asbestos management requirements in federally owned or leased buildings and facilities is also provided by the federal government in the National Joint Council Occupational Health and Safety Directive (NJC OHS), Part XI – Hazardous Substances, 11.6 Asbestos Management. Currently the NJC OHS Directive directs federal departments to follow the PSPC (formerly Public Works and Government Services Canada) Policy DP 057 dated 1997-12-03 for asbestos management. The NJC OHS Directive will soon be updated and DP 057 will be replaced with the new PSPC Asbestos Management Standard that was released in June 2017.

The June 2017 PSPC Asbestos Management Standard was released prior to recent changes made in the CLC Part II regarding asbestos management. The PSPC Standard is currently being revised and updated to include these recent amendments to the CLC.

For the purposes of this report, the following federal requirements will be followed, unless provincial requirements are more stringent. Federal legislation and policy referenced in this report includes:

- Canada Labour Code, *Canada Occupational Health and Safety Regulations Part X, Hazardous Substances*; SOR/86-304, 2017-06-20 (or most current version);
- Public Services and Procurement Canada Asbestos Management Standard, June 2017 (or most current version);
- National Joint Council Occupational Health and Safety Directive (NJC OHS), Part XI – Hazardous Substances, 11.6 Asbestos Management, January 1, 2001 (or most current version); and
- Transport Canada, Transport of Dangerous Goods Regulations.

3.2 Provincial Regulations

In Alberta occupational exposure and the management of hazardous materials in the workplace is regulated by the Alberta Occupational Health and Safety (OH&S) Act, Regulation and Code, 2009. Part 4 Chemical Hazards, Biological Hazards, Harmful Substances, of the Alberta OH&S Code, 2009 defines the general requirements for controlling worker exposure to hazards in the work place.

Other regulations and guidelines relevant to hazardous building materials include:

- Alberta Environmental Protection and Enhancement Act (EPEA), 62/2013
- Alberta EPEA “Waste Control Regulations”, 192/1996
- Transport Canada Transportation of Dangerous Goods Act, 1992 & Regulations, 2012
- Alberta Occupational Health and Safety (OH&S) Asbestos Abatement Manual, 2012
- Alberta User Guide for Waste Managers, 3/1995

The Alberta Environmental Protection and Enhancement Act, 62/2013 is law which was passed to protect and enhance the environment. The Act places the onus on the owner, employer, and employee to ensure that no adverse effects are experienced in the environment. Part 5 section 108 of the Act discusses prohibitions of the release of substances into the environment.

The Waste Control Regulation, 192/1996 (amendments up to and including Alberta Regulation 62/2013) refers to the Alberta User Guide for Waste Managers, 3/1995, which outlines the materials and criteria to be used to characterize waste as hazardous. Asbestos has established criteria which define whether or not these materials are considered hazardous waste.

The Transport Canada Transportation of Dangerous Goods Act 1992 governs the transportation of hazardous wastes. The Transportation of Dangerous Goods Regulation 2012 outlines the requirements for storage, handling, and transportation of hazardous wastes in Canada.

3.3 Asbestos-Containing Materials (ACM)

Part 4, and Schedule 1, Table 2 of the OH&S Code, 2009, defines occupational exposure limits (OELs) for a variety of airborne contaminants. The OEL for a particular contaminant represents conditions to which it is believed that nearly all workers may be exposed, day after day, without suffering from adverse health effects. Due to individual susceptibility, a small percentage of workers may experience discomfort at concentrations below the applicable OEL. An 8-hour OEL refers to the average concentration of a substance over an 8-hour period.

The Environmental Protection and Enhancement Act is law which was passed to protect and enhance the environment. As such, the Act and the regulations under the Act are enforceable by law. The Act places the onus on the owner; employer and employee to ensure no adverse effects are experienced in the environment.

The Alberta Asbestos Abatement Manual is a guide published by Alberta OH&S that is used as a guide for determining compliance with the Occupational Health and Safety Act in the Province of Alberta. It covers basic information on asbestos, health hazards, and requirements for worker protection, safe work practices, and the basic principles to follow for the safe abatement of ACM.

Sections 31 through 38 in Part 4 of the Alberta OH&S Code, October 2009, outline the requirements related to asbestos in buildings. Sections 31 to 33 specifically outline the limitations on the use of asbestos in buildings. Sections 34 to 38 outline requirements pertaining to asbestos in buildings to be demolished, buildings to be renovated or altered, project notifications, worker training, and containment and labeling of asbestos. The requirements of sections 34 through 38 are summarized below:

- buildings to be demolished are to have all materials with the potential of releasing asbestos fibres removed;
- ensure that if a building is to be renovated, materials in the area of the renovation that could release asbestos fibres are encapsulated, enclosed or removed;
- if asbestos-containing materials remain in place, a management plan is needed;
- a Notification of Project must be submitted at least 72 hours prior to beginning activities that may release asbestos fibres;
- asbestos waste is to be stored, transported and disposed of in sealed containers that are clearly labeled to identify the contents and that the contents should not be inhaled.

3.4 Lead-Based Paint

Presently there are no regulations in Alberta specifically addressing lead levels in paint. There is still an onus on an employer to ensure the health and safety of workers engaged in the work and on the work site of that employer. In the Work Safe Alberta *Bulletin Lead at The Work Site* released by the Alberta Government in 2013 paint that contains lead by more than 90 ppm is to be considered lead-based 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.

3.3 Polychlorinated Biphenyls (PCB)

In accordance with Part 1 Section 12.1 of the Alberta EPEA “Waste Control Regulations”, 192/1996, PCB-containing equipment is defined as any equipment, machinery or similar manufactured items, including a capacitor, and an electrical transformer, that contains a PCB liquid or solid. This definition includes fluorescent light ballasts which contain PCBs in the capacitor. 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 regulations specified by Alberta Environmental Protection.

3.4 Mercury

Elemental mercury used in switches can be recycled as outlined under Part 1 – Hazardous Waste and Hazardous Recyclables of the Waste Control Regulation. Within Part 1, the conditions, requirements and operating conditions for recycling facilities are outlined.

Mercury is commonly found in buildings in fluorescent light tubes (FLT), in thermometers, thermostats and some electrical switches. 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 and equipment they must be removed, handled and disposed in accordance with Alberta Environment regulations.

3.5 Ozone Depleting Substances (ODS)

The Alberta EPEA “Ozone-Depleting Substances and Halocarbons Regulation” 181/2000 defines the requirements for controlling the release of ODS in the environment. Section 2 General Prohibition of the regulation states that no person shall release or permit the release of an ozone-depleting substance into the environment.

Ozone-depleting substances (ODS) are found in air conditioning units and refrigerators. ODS in air conditioning units and refrigerators poses no risk to workers or occupants provided that there is no release of ODS. In Alberta, the “general prohibition on release” requires that no person shall release or permit the release of any ozone-depleting substances into the ambient air. If renovations or demolition impact any ODS and/or equipment containing ODS, they must be removed, handled and disposed in accordance with Alberta Environment regulations.

3.6 Radioactive Materials

Radioactive materials are found in smoke detectors. Radioactive materials in smoke detectors pose no risk to workers or occupants provided there is no release of the radioactive materials. If renovations or demolition may impact any equipment that contains radioactive materials, they must be removed, handled and disposed of in accordance with Alberta Environmental regulations.

4.0 INVESTIGATION METHODOLOGY

4.1 Asbestos-Containing Materials

The assessment determined the extent of ACM within the Project Area. The assessment was completed on a room-by-room basis to provide a complete inventory. The systems which were reviewed may include, but are not limited to:

- Structural - systems including fireproofing on beams, open and solid webbed joist systems, Q-deck;
- 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, During the assessment the building 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.

If analysis establishes that a bulk material sample does contain asbestos, then the entire area of homogeneous material from which the bulk material sample was taken is considered to be asbestos-containing. Table 1 summarizes these requirements.

Table 1: Bulk Material Samples

Type of Material	Size of Area of Homogeneous Material	Minimum Number of Samples Collected
Any homogeneous material, including but not limited to fireproofing, drywall joint compound, ceiling tile stucco, acoustical and stipple finishes and visually similar floor tiles.	Less than 90 m ² (<1000 ft ²)	3
	90 m ² or more but less than 450 m ² (1000-5000 ft ²)	5
	450 m ² or more (>5000 ft ²)	7

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

4.2 Lead-Based Paint

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

4.3 Polychlorinated Biphenyls

During the assessment 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".

4.4 Mercury-Containing Materials

The Project Area was visually assessed for the presence of mercury-containing equipment such as fluorescent light tubes, high-intensity discharge (HID) bulb and mercury switches.

4.5 Ozone Depleting Substances (ODS)

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

4.6 Miscellaneous Chemicals

The Project Area was visually assessed for the presence of miscellaneous chemicals.

5.0 RESULTS

5.1 Asbestos-Containing Materials

Sixteen (16) samples of building materials suspected to contain asbestos were collected from the Project Area and submitted with a chain of custody for analysis. Table 5.1.1: Results of Asbestos Analysis, details the results of the assessment. The laboratory report is attached in Appendix C. A photographic log is provided in Appendix B. The sample locations are on the floor plans in Appendix A.

**Table 5.1.1: Summary of Asbestos-Containing Materials
 Grierson Center**

Building Number	Sample Number	Sample Description	Location	Asbestos Detected:
1	A1	Terrazzo Red Rock Pattern	Wheelchair Lift Floor	None Detected
1	A2	Terrazzo Grey Rock Pattern	Wheelchair Lift Wall	None Detected
1	A3	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
1	A4-1	Plaster Skim Coat	Wheelchair Lift Ceiling	None Detected
1	A4-2	Plaster Base Coat	Wheelchair Lift Ceiling	None Detected
1	A5-1	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
1	A5-2	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A6	Terrazzo Multi-Color Rock Pattern	Wheelchair Lift Floor	None Detected
4	A7	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
4	A7	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A8-1	Mudding	Wheelchair Lift Wall	2% Chrysotile⁽¹⁾
4	A8-2	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
4	A8-3	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A9-1	Plaster Skim Coat	Wheelchair Lift Ceiling	None Detected
4	A9-2	Plaster Base Coat	Wheelchair Lift Ceiling	None Detected

Building Number	Sample Number	Sample Description	Location	Asbestos Detected:
4	A10	Grout	Wheelchair Lift Wall	None Detected

Notes:

(1) bold results indicate concentrations classified as asbestos-containing

5.2 Lead-Based Paint

Five (5) paint samples suspected to be lead-based were collected from the interior surfaces of the Project Area and submitted with a chain of custody for analysis. Table 5.2.1: Results of Lead-based Paint Analysis details the results of the lead-based paint survey. The laboratory report is attached in Appendix C. A photographic log is provided in Appendix B. The sample locations are on the floor plans in Appendix A.

Table 5.2.1: Summary of Lead Containing Paint

Building Number	Sample Number	Color	Surface Type	Location	Results (ppm) ⁽¹⁾
1	L1	Grey	Metal	Wheelchair Lift	< 5
1	L2	White	Plaster	Walls	419⁽²⁾
4	L3	Beige	Plaster	Ceiling	1030
4	L4	Beige	Tile	Wall Tiles	38700
4	L5	Beige	Metal	Wheelchair Lift	< 5

Notes:

(1) ppm - part per million

(2) bold results indicate concentrations classified as lead based paint

5.3 Polychlorinated Biphenyls (PCB)

Suspect PCB containing ballasts were identified within the Project Area at the time of the assessment.

5.4 Mercury

Approximately four (4) fluorescent light tubes suspected to contain mercury vapour were identified within the Project Area at the time of the assessment.

5.5 Radioactive Materials

No smoke detectors were identified within the Project Area at the time of the assessment.

5.6 Ozone-Depleting Substances (ODS)

No ODS containing equipment was identified within the Project Area.

5.7 Miscellaneous Chemicals

No miscellaneous chemicals were observed within the Project Area at the time of the assessment.

6.0 QUALITY ASSURANCE / QUALITY CONTROL

Quality Assurance and Quality Control (QA/QC) Plans ensure that data used to evaluate laboratory results are accurate and reliable. In this way, data interpretation and analysis will produce results that are scientifically accurate and defensible. The QA/QC program employed for this assessment included the use of duplicate sampling methodologies to determine the precision and bias of the results obtained from laboratory analysis.

Duplicates

Duplicate samples are analysed to check the reproducibility of laboratory analyses. A duplicate sample is defined as any additional sample collected at the same time and in the same as another sample in such a way as to minimize any differences between them. One (1) sample in every 20 was duplicated and submitted for laboratory analysis.

Relative percent difference (a measure of precision) was used to calculate reproducibility in duplicate samples.

Relative Percent Difference (RPD) is calculated by: $RD\% = [X_1 - X_2]/X_{avg} \times 100$, where:

X_1 = concentration observed in the first sample;

X_2 = concentration observed in the second sample; and

X_{avg} = average concentration $[(X_1 + X_2)/2]$.

Acceptable limits for RPD range from 40-50% depending on the sampled material. If a value is within the acceptable limit it is an indication that laboratory results are precise and reliable. Table 6.0.1 summarizes acceptable RPD limits:

Table 6.0.1: Limits for Relative Percent Difference

Sample Analysis	Acceptable RPD
Asbestos	< 50%

Table 6.0.2 below summarizes the duplicated asbestos samples and their calculated RPD.

Table 6.0.2: Asbestos Bulk Duplicate Sample RPD

Sample ID	Result	Duplicate ID	Duplicate Result	RPD	Pass/Fail
A3	None Detected	A5	None Detected	n/a	Pass

One (1) duplicated sample was compared. The sample passed.

7.0 DISCUSSION

7.1 Asbestos-Containing Materials (ACM)

One (1) of the sixteen (16) samples that were collected in the Project Area were identified to contain asbestos. The sample identified as asbestos-containing as defined in the Alberta Occupational Health and Safety (OH&S) Act, Regulation and Code, 2009. The following material was observed to be asbestos-containing:

Mudding

One (1) mudding sample was collected within the Project Area and it was identified to contain asbestos. All mudding around the entrance to Building 4's wheelchair lift should be treated as asbestos-containing.

The survey was non-destructive in nature therefore additional ACM may be present within fixed ceilings, walls and/or floor cavities. Precautions must be taken whenever accessing these concealed areas.

A destructive survey for concealed ACM may be required prior to completing renovation and/or demolition activities.

7.2 Lead-Based Paint

Three (3) of the five (5) samples that were collected in the Project Area contained lead-based paint. The following materials were identified to contain lead-based paint:

- white paint on plaster in Building 1;
- beige paint on plaster in Building 4; and
- beige tile in Building 4.

7.3 Polychlorinated Biphenyls (PCB)

Based on the age of the building PCB-containing ballasts may be present.

7.4 Mercury-Containing Materials

Fluorescent light tubes suspected to contain mercury vapour were observed throughout the Project Area.

7.5 Radioactive Materials

No smoke detectors were observed during the survey.

7.6 Ozone Depleting Substances (ODS)

No ODS containing equipment were identified within the Project Area.

7.7 Miscellaneous Chemicals

No miscellaneous chemicals were observed within the Project Area at the time of the assessment.

8.0 CONCLUSIONS AND RECOMMENDATIONS

1. Prior to renovation activities, ACM must be handled as per the Alberta Occupational Health and Safety Regulations, 2009 and the Alberta Asbestos Abatement Manual. If additional materials not previously identified during the survey are identified during renovation, samples should be collected to identify potential ACM. If the material is to be removed the following procedures should be implemented:
 - low-risk procedures must be followed when handling the asbestos-containing mudding.

-
2. The current scope of work for the removal and replacement of the wheelchair lifts in buildings 1 and 4 indicates that there will be low impact into the asbestos containing mudding. If drilling into the mudding, installing conduit clips, or installing anchors is to be completed, low-risk procedures should be followed as per the Alberta Asbestos Abatement Manual. Specification for the work can be found in Appendix E: Specifications.
 3. Disturbance of lead-based paint may result in exposure to lead, either by inhaling lead dust, or ingesting lead powder. Contamination can include contact with skin and clothing during the disturbance activities and workers must be aware of proper work procedures and health effects and have the appropriate personal protective equipment. It is expected that lead-based paints will be disturbed by work activities. Controls and procedures must be implemented to protect the workers from exposure to lead.
 4. The current scope of work for the removal and replacement of the wheelchair lifts in buildings 1 and 4 indicates that there will be low impact into the lead-based paint. If work on the lead paint is to be completed, low-risk procedures should be followed. Specifications for the work can be found in Appendix E: Specifications.
 5. Based on the age of the building PCB-containing light ballasts 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 fixtures 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 Alberta Environmental Act.
 6. The fluorescent light tubes should be removed and recycled or disposed of in accordance with regulations specified by the Alberta Environmental Act., if they will be impacted by renovation or demolition activities.

9.0 SAFE WORK PROCEDURES

9.1 Asbestos Safe Work Procedures

Safe work procedures for installing conduit clips, installing anchors, and making wall penetrations into asbestos material fall under low risk procedures.

The equipment and materials to complete the tasks include;

- Vacuum Cleaner equipped with a HEPA Filter (DOP certified within last year);
- 6 mil poly asbestos bags;
- 6 mil poly drop sheet;
- Duct tape;
- Spray bottle with water;
- Wash bucket;
- Disposable coveralls; and
- Half-mask respirator with P100 filters.
- Drill

The low low-risk procedures for installing conduit clips, installing anchors, and making wall penetrations are;

1. Prior to work commencing, all associated documentation must be completed and filed with OH&S prior to work proceeding. Work cannot commence until receiving OK from OH&S.
2. Prior to the start of any work involving asbestos any personnel working in the immediate area will be informed of the nature of the work and that suitable precautions will be made to ensure that they are not exposed to asbestos fibers. Only workers wearing all the approved protective equipment are allowed within the work area.
3. Post warning signs and barrier tape that indicates the asbestos hazard and the requirement for protective clothing for anyone entering the exclusion zone.
4. Set up a decontamination station for the clean-up process after work has been completed.
5. All required protective equipment must be worn prior to commencing work.
6. Location of holes are to be marked prior to starting work.
7. Place drop sheet of 6mil plastic on floor of work area to collect any dust created during the work.
8. Wet the wall area around the hole locations to reduce dust.
9. Using a drill with proper bit, begin drilling the hole while holding the vacuum directly adjacent to the drill to collect the airborne dust being created.
10. Proceed with process till all holes have been drilled.
11. Using the HEPA vacuum, clean up any residual dust or debris.
12. Wall and floor will then be sprayed down with water and wiped down with a clean wet cloth to ensure all asbestos dust has been cleaned up.
13. Once complete, all cloths, wipes and drop sheet will be put into a 6mil plastic bag.
14. Any tools used will be washed down and decontaminated before removal of work area.
15. All waste is placed into the 6 mil poly bags, using the vacuum to remove all air in the bag then sealed with duct tape and wipe the outside of the bag. This bag is then placed in a second yellow poly bag with asbestos labelling, have all air removed and end sealed, folded over double and sealed again with duct tape. Bags will be wiped down with clean water prior to leaving work area.
16. Workers will then wipe down their PPE with a wipe and water before they remove their Tyvek suits, gloves, booties and place them into another poly bag and double seal the opening.
17. The hose end of the vacuum will be cleaned and sealed with duct tape to ensure no release of asbestos from the vacuum or vacuum hose.
18. Workers will now wipe down their respirator with clean water before removal. Once clean, duct tape can be placed over the filters to prevent further contamination.
19. Workers will then wash their hands and arms thoroughly.
20. All equipment will be removed from the area.

21. All signs and barriers are taken down.

9.2 Lead Paint Safe Work Procedures

Safe work procedures for installing conduit clips, installing anchors, and making wall penetrations into lead-based paints fall under low risk procedures.

The equipment and materials to complete the tasks include;

- Zero-VOC solvent;
- Chemical resistant gloves;
- Chemical resistant goggles;
- Vacuum

The low low-risk procedures for installing conduit clips, installing anchors, and making wall penetrations are;

1. All required protective equipment must be worn prior to commencing work.
2. Location of holes are to be marked prior to starting work.
3. Use the zero-VOC solvent on the marked locations, and wipe away excess solvent with a cloth.
4. Using a drill with proper bit, begin drilling the hole while holding the vacuum directly adjacent to the drill to collect the dust being created.
5. Proceed with process till all holes have been drilled.
6. Clean up any residual dust or debris.
7. Once complete, all cloths, wipes can be disposed of as regular waste.
8. All equipment will be removed from the area.

10.0 COST ESTIMATE

The estimated costs to safely adhere to the safe work practices for working with quantifiable ACM, lead paint, PCB ballasts, and fluorescent light tubes (FLT) are provided. The costs are based on the current regulatory requirements and our estimate of prices for work that could be contracted for in today's marketplace. Pricing may be affected by seasonality and industry workload.

No allowance for inflation has been included in the budgets. There has been no allowance for the replacement of any materials. All costs are exclusive of associated sales taxes.

10.1 Asbestos Containing Materials (ACM)

The estimated costs for working with the quantifiable ACM is provided in the table below.

Table 10.1.1: Estimated Asbestos Equipment Costs– Building 4

Material	Estimated Quantity	Estimated Cost of Abatement (\$)
6 Mil Plastic Sheeting	1 Roll	\$30.00
Asbestos Disposal Bag	2 Bags	\$30.00
Tyvek Disposable Suite	2 Suits	\$80.00
Half Face Respirator	1 Respirator and Filters	\$40.00
Vacuum Cleaner with HEPA Filter	1 Vacuum with DOP	\$400.00
Total Estimated Cost (excluding associated sales taxes)		~\$580.00

10.2 Lead-Based Paint

The estimated costs for working with the quantifiable lead-based paint is provided in the tables below.

Table 10.2.1: Estimated Lead Equipment Costs– Building 1 and 4

Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
Lead-Paint Stripper	1 Bucket	\$50.00
Chemical Resistant Gloves	1 Set	\$30.00
Chemical Resistant Eye Protection	1 Set	\$20.00
Total Estimated Cost (excluding associated sales taxes)		\$100.00

10.3 POLYCHLORINATED BIPHENYLS (PCB)

The estimated costs for the removal of PCB containing ballasts is provided in the table below.

Table 9.3.1: Estimated Costs of PCB Removal – Building 4

Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
PCB Containing Ballasts	2 units	\$500.00
Total Estimated Cost of Removal (excluding associated sales taxes)		\$500.00

9.4 Mercury-Containing Materials

The estimated costs for the removal of fluorescent light tubes containing mercury vapor material is provided in the table below.

Table 9.4.1: Estimated Costs of FLT Removal – Building 4

Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
Fluorescent Light Tubes	4 units	\$100.00
Total Estimated Cost of Removal (excluding associated sales taxes)		\$100.00

11.0 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 properties, 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 properties.
3. Because of the limitations stated above, the findings, observations and conclusions expressed by EHS^P 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^P 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^P's liability. EHS^P'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.

12.0 REFERENCES

Alberta Asbestos Abatement Manual 2012, Government of Alberta, Edmonton, AB
<https://open.alberta.ca/dataset/581a2174-b6b6-4620-83bb-69b487ef0886/resource/edc383e7-d618-4c2a-afcb-5421cce4bfc2/download/5446897-2012-alberta-asbestos-abatement-manual-2012-10.pdf>

Alberta Occupational Health and Safety (OH&S) Act, Regulation, and Code 2018 Government of Alberta, Edmonton, AB
<https://www.alberta.ca/ohs-act-regulation-code.aspx>

Environmental Protection and Enhancement Act: Ozone-Depleting Substances and Halocarbons Regulations 2000, Government of Alberta, Edmonton, AB

http://www.qp.alberta.ca/documents/Regs/2000_181.pdf

Environmental Protection and Enhancement Act: Waste Control Regulation 1996, Government of Alberta, Edmonton, AB

http://www.qp.alberta.ca/documents/Regs/1996_192.pdf

Environmental Protection Series: Identification of Lamp Ballasts Containing PCBs 1991, Environment Canada, Ottawa, ON

http://publications.gc.ca/collections/collection_2014/ec/En49-2-2-2-1991-1-eng.pdf

Lead at the Work Site 2013, Government of Alberta, Edmonton, AB

<https://work.alberta.ca/documents/OHS-Bulletin-CH071.pdf>

Appendix A
Floor Plans and Hazardous Materials Locations
Grierson Centre

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BM-18-009



Entrance to Hallway 1-120

A4 Ceiling Sample

A1 Floor Sample

A3 Wall Sample

Entrance to the Basement

A2 Wall Sample

Entrance to Room 1-142




L1 Lift Sample

UP

L2 Wall Sample

A5 Wall Sample

LEGEND

-  A# Negative Asbestos Sampling Locations
-  L# Negative Lead Sampling Locations
-  L# Positive Lead Sampling Locations

SITE

Grierson Center - Building 1
Edmonton, Alberta

CLIENT

PSPC

PROJECT#

456BM-18-009

SCALE

NTS

REFERENCE

EHSP Site Sketch

DATE

Jan 2019

REV

1.0

DRAWN BY

LS

DWG#

1 / of 4



EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700



A10 Wall Sample
 A7 Wall Sample
 L4 Wall Sample

Entrance to Hallway 4-102

L3 Ceiling Sample
 A9 Ceiling Sample

L5 Lift Sample

A6 Floor Sample

UP



Down





Exit to Exterior

A8 Wall Sample



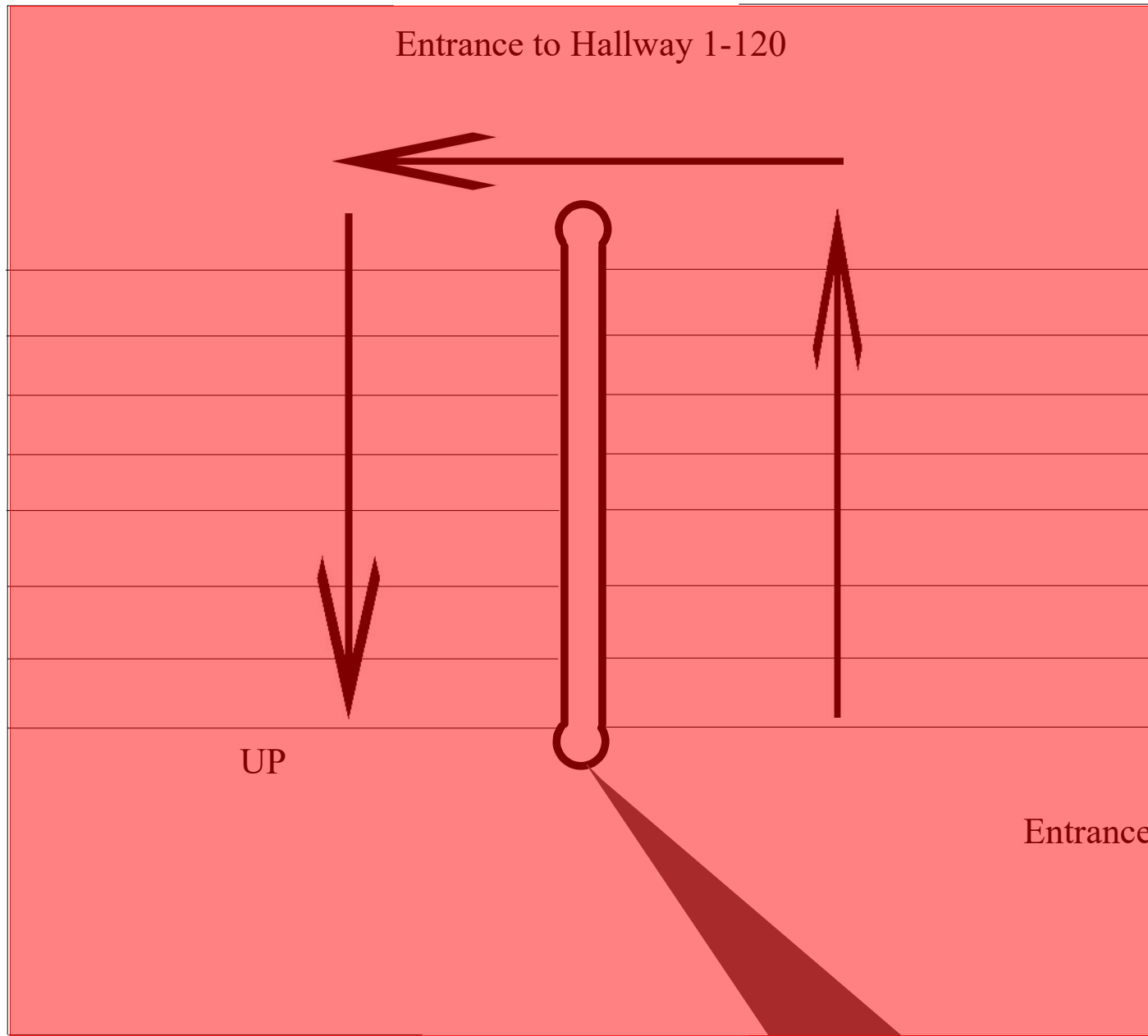
EHS Partnerships Ltd.
 4303 - 11 Street SE
 Edmonton, AB T6E 5W3
 Phone: 780.395.0700

LEGEND

-  **A#** Negative Asbestos Sampling Locations
-  **A#** Positive Asbestos Sampling Locations
-  **L#** Negative Lead Sampling Locations
-  **L#** Positive Lead Sampling Locations

SITE		
Grierson Center - Building 4 Edmonton, Alberta		
CLIENT		
PSPC		
PROJECT#	SCALE	REFERENCE
456BM-18-009	NTS	EHSP Site Sketch

DATE	REV	DRAWN BY
Jan 2019	1.0	LS
DWG#		
2 / of 4		



Entrance to Room 1-142

Entrance to the Basement

UP

Entrance to Hallway 1-120



EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

LEGEND
 Lead Containing White Paint on Plaster Walls and Ceilings

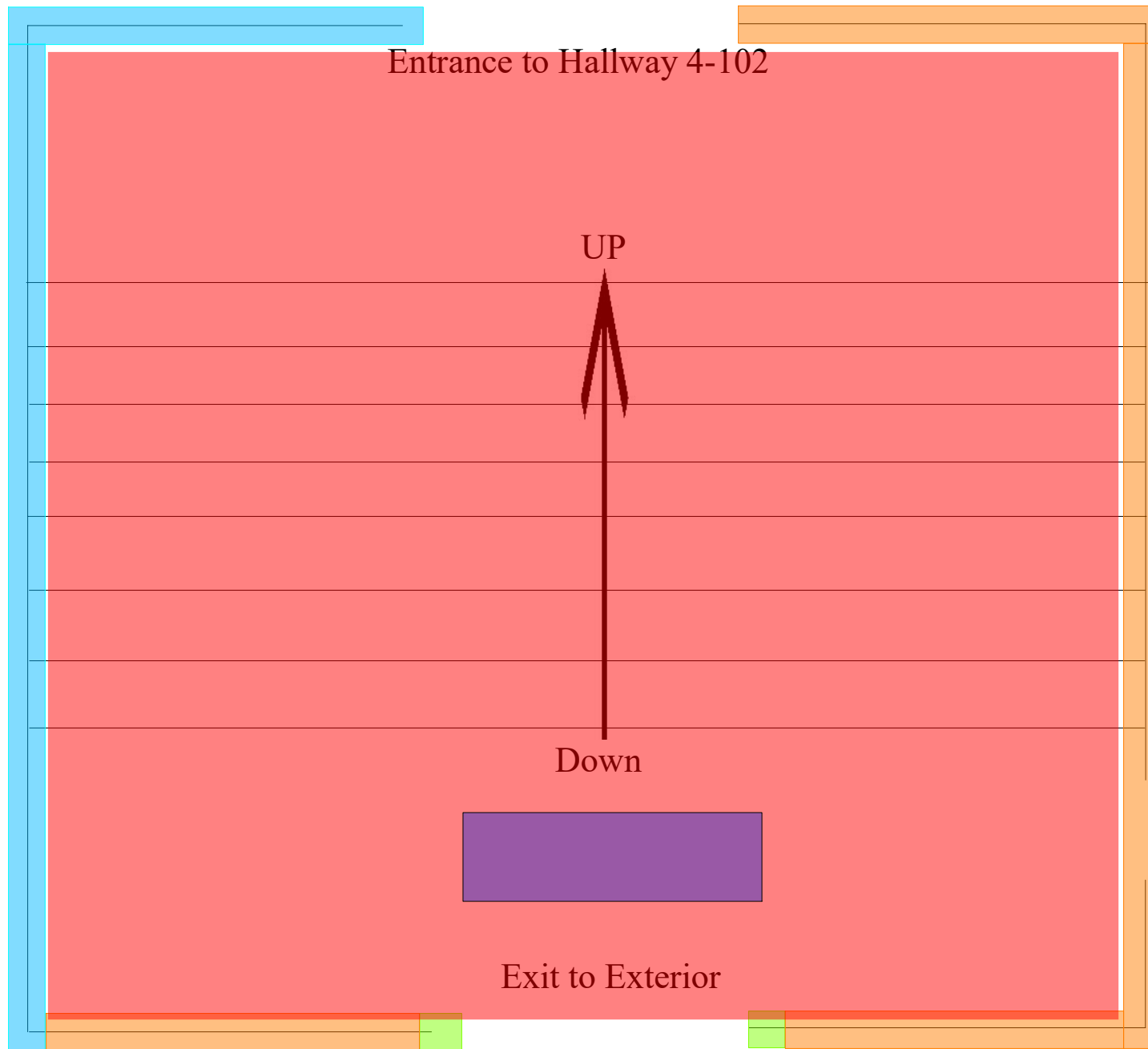
SITE
Grierson Center - Building 1
Edmonton, Alberta

CLIENT
PSPC

PROJECT# 456BM-18-009 SCALE NTS REFERENCE EHSP Site Sketch

DATE	REV	DRAWN BY
Jan 2019	1.0	LS

DWG#
3 / of 4



Entrance to Hallway 4-102

UP

Down

Exit to Exterior

LEGEND

- Lead Containing Beige Paint on Plaster Ceilings
- Lead Containing Beige Paint on Tiles and White Paint on Plaster Wall
- Asbestos Containing Mudding and Lead Containing Beige Paint on Plaster Wall
- Lead Containing Beige Paint on Plaster Wall
- Suspect PCB Ballasts and Mercury FLTS

SITE

Grierson Center - Building 4
Edmonton, Alberta

CLIENT

PSPC

PROJECT#

456BM-18-009

SCALE

NTS

REFERENCE

EHSP Site Sketch

DATE

Jan 2019

REV

1.0

DRAWN BY

LS

DWG#

4 / of 4



EHS Partnerships Ltd.
4303 - 11 Street SE
Edmonton, AB T6E 5W3
Phone: 780.395.0700

ehs^p

**Appendix B
Tables
Grierson Centre**

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BB-18-009

TABLES

Tables from Section 5: Investigation Results

Asbestos

**Table 5.1.1: Summary of Asbestos-Containing Materials
 Grierson Center**

Building Number	Sample Number	Sample Description	Location	Asbestos Detected:
1	A1	Terrazzo Red Rock Pattern	Wheelchair Lift Floor	None Detected
1	A2	Terrazzo Grey Rock Pattern	Wheelchair Lift Wall	None Detected
1	A3	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
1	A4-1	Plaster Skim Coat	Wheelchair Lift Ceiling	None Detected
1	A4-2	Plaster Base Coat	Wheelchair Lift Ceiling	None Detected
1	A5-1	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
1	A5-2	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A6	Terrazzo Multi-Color Rock Pattern	Wheelchair Lift Floor	None Detected
4	A7	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
4	A7	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A8-1	Mudding	Wheelchair Lift Wall	2% Chrysotile⁽¹⁾
4	A8-2	Plaster Skim Coat	Wheelchair Lift Wall	None Detected
4	A8-3	Plaster Base Coat	Wheelchair Lift Wall	None Detected
4	A9-1	Plaster Skim Coat	Wheelchair Lift Ceiling	None Detected
4	A9-2	Plaster Base Coat	Wheelchair Lift Ceiling	None Detected
4	A10	Grout	Wheelchair Lift Wall	None Detected

Notes:

(1) bold results indicate concentrations classified as asbestos-containing

Lead-Based Paint

Table 5.2.1: Summary of Lead Containing Paint

Building Number	Sample Number	Color	Surface Type	Location	Results (ppm)⁽¹⁾
1	L1	Grey	Metal	Wheelchair Lift	< 5
1	L2	White	Plaster	Walls	419⁽²⁾
4	L3	Beige	Plaster	Ceiling	1030
4	L4	Beige	Tile	Wall Tiles	38700
4	L5	Beige	Metal	Wheelchair Lift	< 5

Notes:

(1) ppm - part per million

(2) bold results indicate concentrations classified as lead based paint

Tables from Section 8: Hazardous Materials Considerations and Cost Estimate

Asbestos

Table 10.1.1: Estimated Asbestos Equipment Costs– Building 4

Material	Estimated Quantity	Estimated Cost of Abatement (\$)
6 Mil Plastic Sheeting	1 Roll	\$30.00
Asbestos Disposal Bag	2 Bags	\$30.00
Tyvek Disposable Suite	2 Suits	\$80.00
Half Face Respirator	1 Respirator and Filters	\$40.00
Vacuum Cleaner with HEPA Filter	1 Vacuum with DOP	\$400.00
Total Estimated Cost (excluding associated sales taxes)		~\$580.00

Lead-Based Paint

Table 10.2.1: Estimated Lead Equipment Costs– Building 1 and 4

Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
Lead-Paint Stripper	1 Bucket	\$50.00
Chemical Resistant Gloves	1 Set	\$30.00
Chemical Resistant Eye Protection	1 Set	\$20.00
Total Estimated Cost (excluding associated sales taxes)		\$100.00

Polychlorinated Biphenyls (PCB)

Table 9.3.1: Estimated Costs of PCB Removal – Building 4

Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
PCB Containing Ballasts	2 units	\$500.00
Total Estimated Cost of Abatement (excluding associated sales taxes)		\$500.00

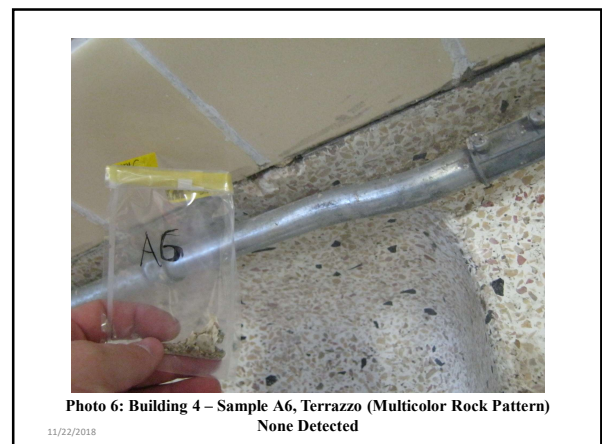
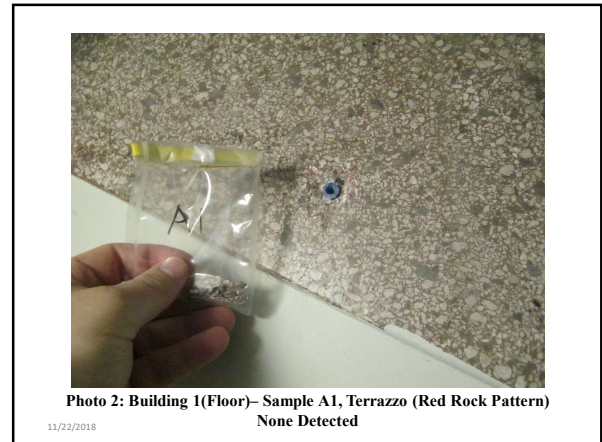
Mercury-Containing Materials

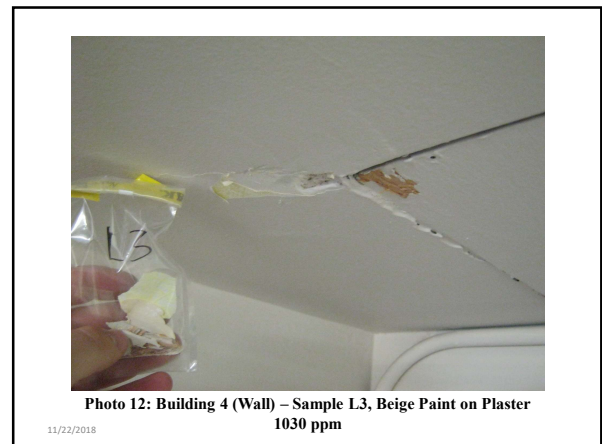
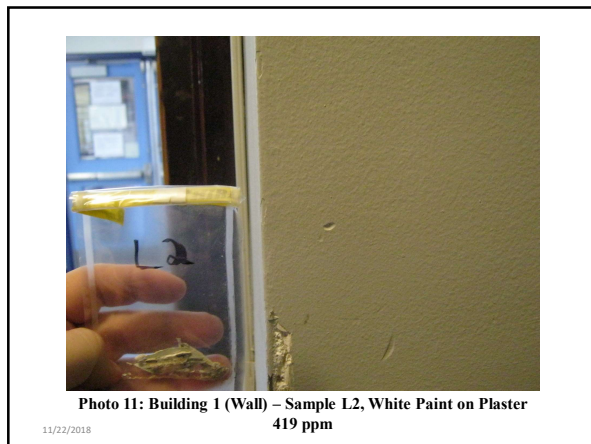
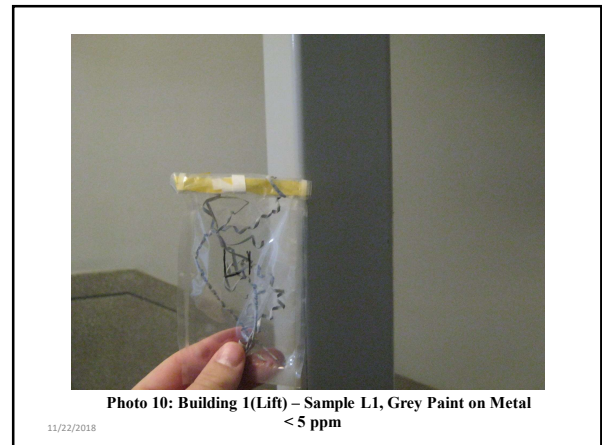
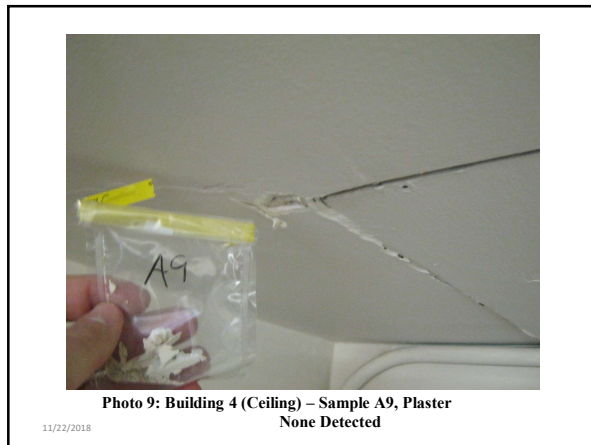
Table 9.4.1: Estimated Costs of FLT Removal – Building 4

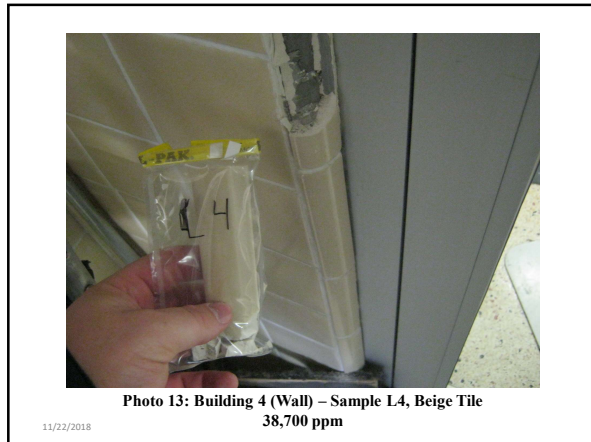
Abatement Type	Estimated Quantity	Estimated Cost of Abatement (\$)
Fluorescent Light Tubes	4 units	\$100.00
Total Estimated Cost of Abatement (excluding associated sales taxes)		\$100.00

Appendix C
Photographic Log
Grierson Centre

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BB-18-009







Appendix D
Laboratory Certificates of Analysis – Asbestos and Lead
Grierson Centre

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BB-18-009

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 500100-0

EMSL Canada Inc.

Calgary, Alberta
Canada

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

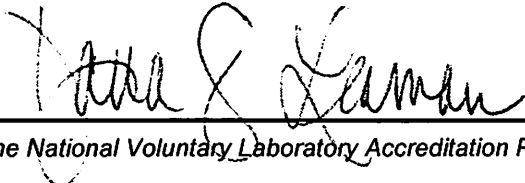
Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2018-07-01 through 2019-06-30

Effective Dates




For the National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

EMSL Canada Inc.
2333 18th Avenue NE, Unit 48
Calgary, Alberta T2E 8T6
Canada
Mr. Jefferson Salvador
Phone: (403) 879-1149
Email: jsalvador@emsl.com
<http://www.emsl.com>

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 500100-0

Bulk Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

A handwritten signature in black ink, appearing to read "Peter J. Leman".

For the National Voluntary Laboratory Accreditation Program



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

EMSL Canada Order: 651809384

Customer ID: 55EHAB42

Customer PO: 456BM18009

Project ID:

Attention: Lucas Sheptycki
EHS Partnerships Ltd.
4940 - 87 Street NW
Edmonton, AB T6E 5W3

Phone: (780) 395-0700

Fax:

Received Date: 10/02/2018 10:35 AM

Analysis Date: 10/04/2018

Collected Date: 10/01/2018

Project: GRIERSON CENTER

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 651809384-0001	BUILDING 1 - BASEMENT - TERRAZZO FLOORING - RED ROCK PATTERN	Red Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
A2 651809384-0002	BUILDING 1 - BASEMENT WALL - TERRAZZO - GREY ROCK PATTERN	Gray Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
A3-Skim Coat 651809384-0003 <i>No base coat present in sample submitted</i>	BUILDING 1 - BASEMENT WALL - PLASTER	Beige Non-Fibrous Homogeneous		30% Perlite 70% Non-fibrous (Other)	None Detected
A4-Skim Coat 651809384-0004	BUILDING 1 - MAIN FLOOR CEILING - PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A4-Base Coat 651809384-0004A	BUILDING 1 - MAIN FLOOR CEILING - PLASTER	Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A5-Skim Coat 651809384-0005	BUILDING 1 - 2ND FLOOR WALL - PLASTER	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A5-Base Coat 651809384-0005A	BUILDING 1 - 2ND FLOOR WALL - PLASTER	Beige Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
A6 651809384-0006	BUILDING 4 - TERRAZZO FLOORING - MULTI-COLOUR ROCK PATTERN	Gray/Red Non-Fibrous Homogeneous		2% Quartz 98% Non-fibrous (Other)	None Detected
A7-Skim Coat 651809384-0007	BUILDING 4 - WALL - PLASTER	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A7-Base Coat 651809384-0007A	BUILDING 4 - WALL - PLASTER	White Non-Fibrous Homogeneous		5% Quartz 95% Non-fibrous (Other)	None Detected
A8-Mud 651809384-0008	BUILDING 4 - WALL - PLASTER	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
A8-Skim Coat 651809384-0008A	BUILDING 4 - WALL - PLASTER	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A8-Base Coat 651809384-0008B	BUILDING 4 - WALL - PLASTER	Beige Non-Fibrous Homogeneous		5% Quartz 10% Vermiculite 85% Non-fibrous (Other)	None Detected
A9-Skim Coat 651809384-0009	BUILDING 4 - CEILING - PLASTER	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 10/09/2018 15:14:45



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

EMSL Canada Order: 651809384

Customer ID: 55EHAB42

Customer PO: 456BM18009

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-Base Coat <small>651809384-0009A</small>	BUILDING 4 - CEILING - PLASTER	Beige Non-Fibrous Homogeneous		5% Quartz 10% Vermiculite 85% Non-fibrous (Other)	None Detected
A10 <small>651809384-0010</small>	BUILDING 4 - WALL - GROUT- WHITE	White Non-Fibrous Homogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected

Analyst(s)

Kate Fee (16)

Jefferson Salvador, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method"), but augmented with procedures outlined in the 1993 ("final") version of the method. 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 or analytical method limitations. Interpretation and use of test results are the responsibility of the client. All samples received in acceptable condition unless otherwise noted. 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. EMSL recommends gravimetric reduction for all non-friable organically bound materials prior to analysis. Estimation of uncertainty is available on request.

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

Initial report from: 10/09/2018 15:14:45

Certificate of Analysis

EHS Partnerships Ltd. (Calgary)

4303-11 St. SE
Calgary, AB T2G 4X1
Attn: Lucas Sheptycki
Client PO: 456BM18009
Project: 456BM18009
Custody:

Report Date: 9-Oct-2018
Order Date: 2-Oct-2018

Order #: 1840496

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

Parcel ID	Client ID
1840496-01	L1 Grey Paint on Lift Support Columns
1840496-02	L2 White Paint on Plaster Wall
1840496-03	L3 Beige Paint on Plaster Wall
1840496-04	L4 Beige Tile
1840496-05	L5 Beige Paint on Lift

Approved By:



Dale Robertson, BSc
Laboratory Director

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

Certificate of Analysis
Client: EHS Partnerships Ltd. (Calgary)
Client PO: 456BM18009

Report Date: 09-Oct-2018
Order Date: 2-Oct-2018
Project Description: 456BM18009

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	5-Oct-18	5-Oct-18

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Certificate of Analysis
 Client: EHS Partnerships Ltd. (Calgary)
 Client PO: 456BM18009

Report Date: 09-Oct-2018
 Order Date: 2-Oct-2018
 Project Description: 456BM18009

Sample Results

Lead				Matrix: Paint
				Sample Date: 01-Oct-18
Paracel ID	Client ID	Units	MDL	Result
1840496-01	L1 Grey Paint on Lift Support Columns	ug/g	5	<5
1840496-02	L2 White Paint on Plaster Wall	ug/g	5	419
1840496-03	L3 Beige Paint on Plaster Wall	ug/g	5	1030
1840496-04	L4 Beige Tile	ug/g	5	38700
1840496-05	L5 Beige Paint on Lift	ug/g	5	<5

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	ND	5	ug/g						
Matrix Duplicate									
Lead	84000	5	ug/g	71200			16.4	50	
Matrix Spike									
Lead	123		ug/L	62.3	121	70-130			



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Turnaround Time:

1 Day 3 Day

2 Day Regular

Date Required: _____

Client Name: EHS Partnerships Ltd.	Project Reference: 456BM18009
Contact Name: Lucas Sheptycki	Quote #
Address: 4940 - 87 Street NW	PO # 456BM18009
Telephone: 780.919.3007	Email Address: lsheptycki@ehsp.ca

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

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Parcel Order Number:

1840496

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Lead						
				Date	Time														
1 Grey Paint on Lift Support Columns	p			oct 1	9:30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 White Paint on Plaster Wall	p			oct 1	9:30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Beige Paint on Plaster Wall	p			oct 1	9:45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Beige Tile	p			oct 1	9:45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Beige Paint on Lift	p			oct 1	9:45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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10						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: Sample ID's read LP1, LP2, LP3, LP4, LP5, colours match respectively to sample #'s. W

Method of Delivery:

Fedex

Relinquished By (Sign):	Received by Driver/Depot: H. CAO @ BIO	Received at Lab: SUNEET PARNI DOCKMANI	Verified By:
Relinquished By (Print): Lucas Sheptycki	Date/Time: Oct 2 11:18	Date/Time: Oct 04 2018 11:13	Date/Time: 10/01/18 2:25pm
Date/Time: October 1, 2018 / 11:45	Temperature: _____ °C	Temperature: _____ °C	pH Verified () By: _____

Appendix E
Health and Safety Plan
Grierson Centre

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BB-18-009



**SITE SPECIFIC HEALTH AND SAFETY PLAN
Hazardous Materials Survey, Plans and Specifications
Terms of Reference #R.100533.001**

Submitted to:

c/o SLR Consulting (Canada) Ltd.
Public Services and Procurement Canada
10025 Jasper Ave,
Edmonton, AB T5J 1S6

Submitted by:

EHS Partnerships Ltd.
4940 – 87 Street NW
Edmonton, AB T6E 5W3

September 2018

EHS^P Project #456BM18009



OCCUPATIONAL HEALTH AND SAFETY POLICY

EHS Partnerships Ltd. (EHS^P) is committed to a strong health and safety program that protects our staff, our property, the environment, and the general public from accidents. It is our belief that the personal health and safety of each employee is of primary importance.

The prevention of occupationally induced injuries and illnesses is of such consequence that it will be given first priority always. To the greatest degree possible, management will provide all mechanical and physical facilities required for personal safety and health, in keeping with the highest standards.

The owners of EHS^P will maintain a health and safety program conforming to the best practices of similar organizations. Employees at every level, including management, are responsible for, and must be held accountable for the overall safety initiative. This includes program development, implementation, and maintenance as well as the reporting of all accidents, incidents, and property damage.

Our Occupational Health and Safety Program conforms to the federal, provincial and municipal regulations but is not limited to those legislations. All employees of EHS^P should be familiar with all applicable regulations as well as EHS^P's policies and procedures.

Our safety program includes:

- providing the necessary mechanical and physical safeguards, which will include proper instruction(s) of the procedures and use, to the maximum extent possible in order to complete the specified job safely;
- regular re-evaluation of the of health and safety program to eliminate sudden unsafe working conditions, to control health hazards and to comply entirely with the Occupational Health and Safety
- legislation for every job;
- on-going training to all employees;
- providing additional protective equipment and instructions for its use and care, when needed and pre- approved by EHS^P;
- developing and enforcing health and safety policies and procedures that require the employees' cooperation and recognition as a condition of employment; and
- investigating every incident promptly and thoroughly to evaluate the cause and provide a solution to prevent similar situations.

We recognize that the responsibilities for health and safety are shared:

- As the employer we accept responsibility for leadership of the health and safety program, for its effectiveness and improvement and for providing the safeguards required to maintain safe conditions; and
- Employees are responsible for true cooperation with all aspects of the health and safety program including compliance with all rules and regulations and for continually practicing safety while performing their duties.

The safety information in this policy does not take precedence over applicable government legislation with which all employees should be familiar.

We are committed to providing a safe work environment and will conduct business in a manner that protects the health and safety of our employees, sub-contractors, and others involved in our operations.



Paul MacKinnon, M.Sc., CIH

July 30, 2018

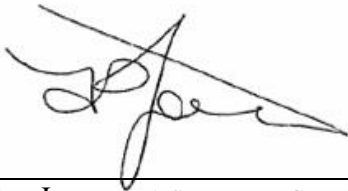
Date



Dave Christie

July 30, 2018

Date



Glyn Jones, M.A.Sc., P.Eng., CIH, CRSP

July 30, 2018

Date

1.0 INTRODUCTION

This Health and Safety Plan (HASP) establishes responsibilities, protective measures, safe work practices, and emergency procedures for hazardous material surveys conducted by EHS^P personnel.

The HASP is based upon EHS^P's Health and Safety Policies and Procedures and the legislative requirements of the province of Alberta.

This was prepared specifically for the Public Services and Procurement Canada (PSPC) site located in Edmonton, AB, as per Terms of Reference (TOR) #R.100533.001, dated August 20, 2018. It should not be used on any other sites without prior authorization.

A copy of this HASP will be available at the PSPC job site.

1.1 Applicability

This HASP is applicable for the locations on this site where EHS^P employees conduct work. This HASP was written for the use of EHS^P and its employees.

EHS^P claims no responsibility for unauthorized use of this HASP by others. This HASP is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change. The Corporate Manager of Health and Safety must approve any changes to this HASP.

1.2 Scope of Work

EHS^P was engaged by SLR Consulting (Canada) Inc. (SLR) to support them in the completion of a hazardous materials survey and the development of plans and specifications for PSPC. The work will be conducted at the PSPC site in Edmonton, AB.

The following is a description of specific tasks planned during this project.

- Review of previous hazardous materials related reports for each site;
- Mobilization to site;
- Completion of hazardous materials survey in select locations of buildings 1 and 4;
- Development of a survey report; and
- Potential development of an abatement drawing and specifications.

1.3 Site Description and History

Based on the information provided by PSPC, there are 2 minimum security buildings on site in which work shall be conducted. These structures will be occupied throughout the day.

2.0 EMERGENCY PROCEDURES AND CONTACT INFORMATION

If an injury or illness occurs, take the following action:

1. Get first aid for the person immediately.
2. If injury is severe, call 911 immediately.
3. Notify the Site Health & Safety Officer (SHSO) who will assume charge during a medical emergency (see Section 2.4 for contact information).
4. The SHSO is responsible for preparing and submitting the Incident & Near Miss Investigation Report to the Project Manager within 24 hours.
5. The SHSO must also ensure that Glyn Jones, the employee's supervisor, and the Operations Manager are notified immediately.

2.1 Closest Medical Facility

The closest hospital is the Royal Alexandra Hospital, located at 10240 Kingsway NW, Edmonton, AB T5H 3V9

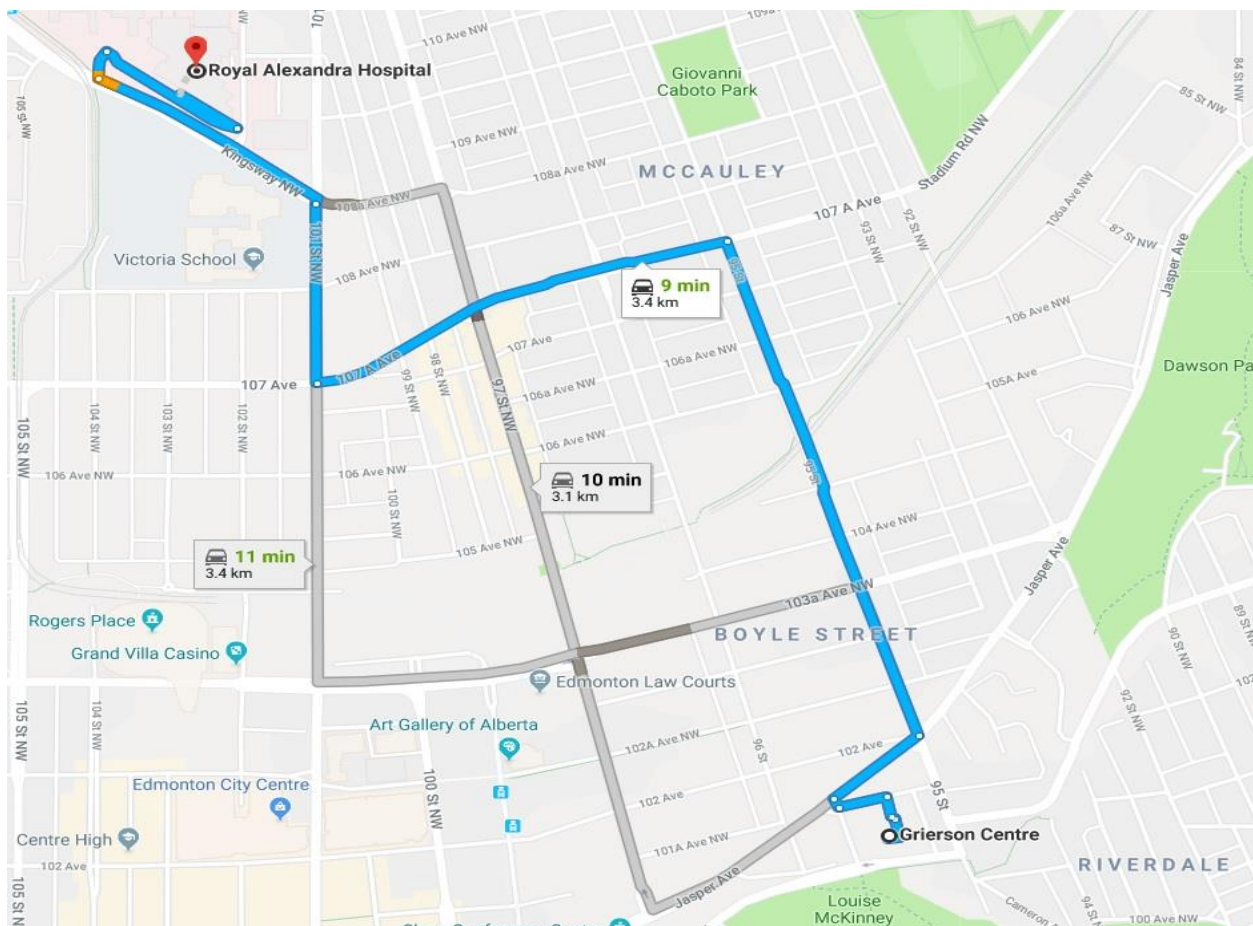


Figure 2.1.1 – Map to Royal Alexandra Hospital

2.2 Emergency Numbers

Local Emergency Numbers		Name	Alternative Telephone Numbers
Hospital	911	Royal Alexandra Hospital	780.735.4111
Police		Edmonton Downtown Police	780.423.4567
Fire		Edmonton Fire Department	780.442.5445

2.3 Client Contact Numbers

Name	Client	Phone
Matt Drage	SLR Consulting	Cell: 780.242.0540
Andrew Gillese	PSPC	Cell: 587.926.4701

2.4 EHS^P Contact Numbers

Name	EHS ^P Position	Phone
Bill Martin	Project Manager / Operations Manager	Office: 780.395.0700 Cell: 780.394.0997
Glyn Jones	Manager, Corporate Health and Safety (Near Miss Reporting)	Office: 403.243.0700 Cell: 403.630.3854

3.0 PROJECT SAFETY PRACTICES

All project health and safety practices will meet as a minimum, EHS^P's Health & Safety Policies and Procedures, and all applicable provincial and federal legislation. The following general work practices will be enforced:

- A site walkthrough will be conducted before the commencement of any work onsite in order to identify any onsite hazards not included in this HASP. The HASP will be modified if necessary and the new hazards communicated to all onsite staff in the tailgate meeting.
- An EHS^P Field Level Hazard Assessment (FLHA) form will be completed prior to commencing work activities/
- There will be full Workplace Hazardous Materials Information System (WHMIS) compliance for chemicals and containers brought to the site; requirements include Material Safety Data Sheets (MSDS), proper labeling, and employee training.
- Only essential personnel will be allowed into work areas while sample collection is taking place.

3.1 Minimum Training Requirements

All site workers will be properly trained and qualified to perform their duties. At a minimum, workers at this site will have the following training:

- Workplace Hazardous Materials Information System (WHMIS);
- First aid and Cardio Pulmonary Resuscitation (CPR);
- Respirator fit test and training;
- Asbestos awareness training; and
- Knowledge of industry work practices and protocols.

3.2 Personal Protective Equipment (PPE)

All personnel will have at a minimum the following available onsite:

- Field appropriate first aid kit;
- Steel toe boots;
- Half-face respirator equipped with P-100 HEPA filter; and
- Proper tools to complete work procedures, tools will be inspected to ensure they are in good working order prior to commencement of work activities.

3.3 Tools and Site Materials

To complete the work procedures, the following will be required for hazardous materials assessment:

- Survey kit and tools. Tools will be inspected to ensure they are in good working order and any defects will be repaired or replaced;
- Spray bottle with water or amended solution;
- Sample collection bags and large ziplock bags;
- Duct tape for patching and repairs; and
- Stationary and note taking materials;
- Digital Camera; and
- Measurement tools.

4.0 PROJECT HAZARD ASSESSMENT

This section identifies potential hazards that may be encountered as during the execution of the scope of work at this site and references appropriate Policies and Procedures. The tables reference the following EHS^P internal documents:

- EHS^P Occupational Health and Safety Management System Program Manual, 2016 (OHSMS);
- EHS^P Job Hazard Analysis (JHA)
- EHS^P Safe Work Procedures (SWP) Documents; and
- EHS^P Standard Job Practices (SJP) Documents.

Table 4.0.1 – Hazards Common to All Projects

Activity	Potential Hazard	Reference
Preparation of a HASP	Unidentified or misidentified hazards	JHA-10: General Office Duties SJP-017: Housekeeping
Job Preparation and Reporting	Office Hazards	JHA-10: General Office Duties SJP-017: Housekeeping
Maintenance of work site	Slips, Trips and falls. Fire prevention	JHA-4: Surveys SWP-006: Surveys SJP-007: Electrical Safety SJP-011: Fire Prevention SJP-013: Hazardous Materials JHA 1: Air Monitoring JHA 8: General Contaminants
Regulatory Inspections	Citations or fines	OHSMS Manual
Identification of applicable personal protective equipment (PPE)	Physical injury or chemical exposure from inappropriate selection of PPE	JHA-4: Surveys SWP-006: Surveys SJP-024: Personal Protective Equipment Selection
Driving to site and driving around site	Motor Vehicle Accident	JHA-4: Driving SWP-008: Driving SJP-020: Traffic

Table 4.0.2 – Hazards of Specific Projects

Will project activities involve any of the following?			
Activity	Potential Hazard	Y/N	Reference
Use of hand tools or other portable equipment	Injury from improper use or maintenance of tools or other portable equipment.	Y	JHA-4: Surveys SWP-006: Surveys SJP-012: Hand and Power Tools
Collection of hazardous samples.	Contact with contaminated media. Spreading of site contaminants. Inhalation of site contaminants. Contact with biological waste (sharps).	Y	JHA-4: Surveys SWP-006: Surveys SJP-013: Hazardous Materials SJP-018: Asbestos Samples SJP-024: Personal Protective Equipment
Work in extreme temperatures	Heat stress and heat stroke. Hypothermia and frostbite.	N	SJP-014: Heat and Cold Stress
Lifting	Back and limb injury.	N	SJP-019: Manual Lifting and Heavy Objects
Storage, handling, use, transportation/shipping of controlled products	Explosion, fire and personal injury.	N	SJP-003: Compressed Gas SJP-011: Fire Prevention
Working Remote/ alone after hours	Injury to worker and no immediate help.	N	n/a
Out of City Travel to Site	Flights, Bus, Taxi, Hotels, etc.	N	JHA-6: Off-Site Travel
Working from heights	Fall arrest. Ladder Safety.	Y	SJP-022: Working at Elevations SJP-023: Ladder Safety
Working in a noisy environment (mech. Room)	Hearing loss.	N	SJP-011: Fire Prevention
Working in Hazardous Environments	Hot Work. Fire Prevention.	N	SJP-007: Electrical Safety SJP-011: Fire Prevention SJP-016: Hot Work
Working in a confined space	IDLH	N	SJP-004: Confined Space Entry

5.0 SIGNATURES

Bill Martin
Project Manager



Signature

September 27, 2018
Date

Appendix F
Specifications
Grierson Centre

Hazardous Materials Investigation
Public Services Procurement Canada
Grierson Center
Edmonton AB
EHS^P Project: 456BB-18-009

This Technical Specification Section contains:

- .1 This Cover Sheet
- .2 Data Sheet - General
- .3 Specification Section Text:
 - 1. General**
 - 1.1 Intent
 - 1.2 Reference Documents
 - 1.3 Definitions
 - 1.4 Worker Qualifications
 - 1.5 Submittals
 - 1.6 Regulatory Requirements
 - 1.7 Protection of Personnel
 - 2. Products**
 - 2.1 Material and Equipment
 - 2.2 Asbestos Disposal Containers
 - 2.3 Warning Signs
 - 3. Execution**
 - 3.1 Preparation
 - 3.2 Asbestos
 - 3.3 Preparation for Asbestos Disposal
 - 3.4 Disposal of Normal Construction Waste
 - 3.5 Transportation and Permanent Disposal of Asbestos Waste
 - 3.6 Worker Decontamination
 - 3.7 Daily Cleaning
 - 3.8 Final Cleaning

1. General

1.1 INTENT

- .1 This Section specifies general requirements common to all asbestos control work. Read this section in conjunction with related Sections that specify requirements for specific procedures and methods for asbestos control.

1.2 REFERENCE DOCUMENTS

- .1 Alberta Asbestos Abatement Manual, Current Edition, available online from Alberta Labour.
- .2 Alberta User Guide for Waste Managers, available online from Alberta Environment and Parks.
- .3 Guidelines for the Disposal of Asbestos Waste, available online from Alberta Environment and Parks.
- .3 CAN/CGSB-1.205-03, Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .4 CAN/CGSB-43.150-97, Performance Packaging for Transportation of Dangerous Goods.

1.3 DEFINITIONS

- .1 Asbestos Control Work: means asbestos containment procedures, removal or encapsulation, and disposal of asbestos or materials containing asbestos, as specified.
- .2 Asbestos Control Area: means space in which asbestos control work is being performed and to which general access is prohibited.
- .3 Asbestos Waste: means removed contaminant and contaminated materials or products.
- .4 Contaminant: means asbestos material.
- .5 Contaminated: describes products, by-products, or material containing, or affected by, asbestos or removal thereof.
- .6 Full Containment Procedures: means construction of temporary facilities and following of procedures to contain asbestos fibres, as specified in Section 02 82 05.
- .7 HEPA Filter: high efficiency particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for powered respirators, vacuums, vacuum trucks and negative air units.
- .8 P100 Filter: high efficiency, oil proof, particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for non-powered air purifying respirators.

1.4 WORKER QUALIFICATIONS

- .1 Workers involved in low or moderate-risk asbestos abatement projects do not require an asbestos worker card but should be trained with the following:
 - .1 health hazards associated with exposure to asbestos.
 - .2 responsibility of workers, employers, contractors and suppliers under the Occupational Health and Safety Act.
 - .3 asbestos requirements in Part 4 of the OHS Code.
 - .4 safe work procedures related to the work.
 - .5 how to properly wear, use and maintain personal protective equipment that will be used at the work site.
- .2 At least one employee who will be performing the work shall have completed a standard first aid course and meet the minimum requirements for first aiders as required by Alberta Occupational Health and Safety Act.
- .3 Persons involved in loading, transportation, unloading, and disposal of asbestos waste shall have been trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.5 SUBMITTALS

- .1 This Section specifies general requirements common to all asbestos control work. The documentation listed below should be present on site during any asbestos control work and be provided to the Environmental Consultant if air monitoring is deemed required.
 - .1 Comply with the requirements of this Section and the Alberta Abatement Manual. Provide submittals to Environmental Consultant for review and approval prior to start of asbestos control work.
 - .2 Submit copy of test results documenting Dioctyl Phthalate (DOP) testing or its equivalent, of HEPA filtered vacuums and negative air units.
 - .3 Submit certification that HEPA filtered vacuums required for this contract meet specified HEPA filter designation for component filter assemblies.
 - .4 Submit disposal procedure for contaminant and contaminated waste.
 - .5 Submit a copy of "Code of Practice" for the work, required by the Occupational Health and Safety Act.
 - .6 Submit a copy of worker protection information which will be provided to employees.
 - .7 Submit plan for air monitoring to ensure use of proper respirators within work area.
 - .8 Submit proof that Occupational Health and Safety has been notified, a minimum of 72 hours before asbestos control work is to be performed. The OHS Contact Center telephone number is 1-866-415-8690.

- .9 Submit proof that all persons involved in the handling, packing, loading, transportation, unloading, and disposal of asbestos waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with the following legislation and regulations:
 - .1 Environmental Protection Act (Canada).
 - .2 Environmental Protection and Enhancement Act (Alberta).
 - .3 Occupational Health and Safety Act, Regulation and Code (Alberta).
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada).
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations.
 - .6 Other legislation and regulations which apply to the performance of asbestos control work.

1.7 PROTECTION OF PERSONNEL

- .1 Provide workers with respirators and hooded disposable coveralls conforming to Occupational Health and Safety Regulations for the airborne asbestos fibre levels that are present during asbestos control work.
- .2 Do not permit smoking, eating or drinking in work area.
- .3 Provide the following to employees involved in asbestos control work:
 - .1 written information describing potential health hazards related to exposure to asbestos fibre.
 - .2 written instructions describing safe work procedures.
- .4 Where full containment procedures are not required, do the following:
 - .1 comply with regulatory requirements.
 - .2 provide workers with not less than a non-powered pre-fitted half-mask respirator equipped with P100 filters and hooded disposable coveralls. Coveralls shall fit snugly around neck, wrists and ankles.
 - .3 allow no one in the removal area during asbestos control work unless wearing disposable coveralls and respirator equipped with P100 filters or as required to protect against reported fibre levels.

- .5 Provide the following safety equipment for Environmental Consultant, as required to permit ready and safe access to the work:
 - .1 disposable coveralls made of material that resists penetration by asbestos fibres.
 - .2 rubber boots or easily decontaminated footwear.
 - .3 caps.
 - .4 eye protection.
 - .5 gloves.
 - .6 hard hats.
 - .7 non-powered half mask respirator equipped with P100 filters (minimum) or as required to protect against reported fibre levels.

2. Products

2.1 MATERIAL AND EQUIPMENT

- .1 Water to dampen the material prior to work.
- .2 Vacuums: HEPA filtered wet/dry type, with accessories adequate to perform cleanup work.

2.2 ASBESTOS DISPOSAL CONTAINERS

- .1 Plastic Bags: to CAN/CGSB-43.150, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50 kg.
- .2 Sheet Polyethylene: two separate layers, minimum 150 micrometer thick, each layer sealed with water-resistant plastic duct tape.
- .3 Label containers with labels stating "CONTAINS ASBESTOS, CANCER HAZARD, AVOID BREATHING DUST".
- .4 Duct Tape: Good quality, water resistant plastic type.

2.3 WARNING SIGNS

- .1 Provide warning signs which state as follows and provide the name of a contact person on-site:
 - .1 caution asbestos dust hazard.
 - .2 avoid breathing dust, wear protective equipment
 - .3 breathing asbestos dust may cause cancer
 - .4 entry is prohibited except to authorized persons.

.5 drinking, eating and smoking are prohibited in this area.

3. Execution

3.1 PREPARATION

.1 Asbestos control work may commence only after the following have been completed:

- .1 existing property, including non-removable equipment and furnishings, surfaces and finishes, have been protected from damage and contamination due to asbestos control work.
- .2 barriers are in place and work area has been isolated.
- .3 warning signs have been placed around perimeter of asbestos control area and at each potential entrance to the area.
- .4 Notice of project has been filed with Workplace Health and Safety and an acceptance has been granted.

3.2 ASBESTOS HANDLING

- .1 Workers performing work on asbestos-containing materials, shall wear required personal protection equipment (PPE) including non-powered half-mask respirator equipped with P100 filters, disposable coveralls made of material that resists penetration by dust, eye protection and impervious gloves.
- .2 Before the work begins a HEPA filtered vacuum, and a pail of soap and warm water with disposable wiping rags (to use as a wash-up station), 150 micrometre polyethylene drop sheet, and good quality duct tape are required.
- .3 Sprinkle debris with water to prevent dust. Do not cause flooding, contaminated runoff or icing. Do not allow waste material, rubbish, and windblown debris to reach and contaminate adjacent properties.
- .4 During the work, the HEPA filtered vacuum should be held adjacent to any penetrations being made into the surface in order to collect majority of the asbestos dust being created.
- .5 Once the work is completed, fully seal the first drop sheet in two 6 mil polyethylene asbestos disposal bags and seal with duct tape.
- .6 Remove disposable coveralls and gloves when leaving work area and fully seal the first coveralls and gloves in two 6 mil polyethylene asbestos disposal bags and seal with duct tape.
- .7 Prior to removal of respirator, workers wash head, face and exterior of respirator thoroughly in wash up station, prior to removing the respirator.

3.3 PREPARATION FOR ASBESTOS DISPOSAL

- .1 Prepare contaminated materials for disposal as follows:
 - .1 place in double bagged plastic asbestos disposal bags or inside disposable drums with tight fitting lids.
 - .2 wrap bulk materials that do not lend themselves to disposal in plastic bags or drums, in sheet polyethylene. (2 separately sealed layers)
 - .3 the resulting package must be constructed, filled and closed so that, under normal conditions of handling and transport, there will be no discharge, emission or escape of the dangerous goods from the package or small container that could constitute a danger to public safety.
- .2 Transfer asbestos waste containers and normal construction waste from asbestos control area for disposal, in accordance with procedures described in the following documents.
 - .1 Alberta Asbestos Abatement Manual, Current Edition, available online from Alberta Labour.
 - .2 Guidelines for the Disposal of Asbestos Waste, available online from Alberta Environment and Parks.
 - .3 Where more than one document addresses an issue, the most stringent requirements shall apply.
- .3 Treat contaminated water as asbestos waste.

3.4 DISPOSAL OF NORMAL CONSTRUCTION WASTE

- .1 This article applies to materials not readily prepared for asbestos disposal as specified, and being capable of thorough cleaning, for example, bulky mechanical equipment.
- .2 Clean materials and equipment until free of visible asbestos, wash, and dip in or spray with asbestos sealer.
- .3 Dispose of as normal construction waste.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL OF ASBESTOS WASTE

- .1 Transport asbestos waste in accordance with Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation. Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act showing the shipping name white Asbestos and product identification number UN2590).
- .3 If spill, emission or discharge of waste asbestos is in excess of 25 kg (or 25L) from the transport unit, immediately report the incident to the local police and appropriate provincial authority at 1-800-272-9600.

- .4 Place asbestos waste containers intact in excavated area. Do not dump or throw containers from truck. Repackage contents of containers that have broken open, in accordance with requirements for preparation for asbestos disposal.
- .5 Arrange for asbestos waste to be covered with soil.

3.6 WORKER DECONTAMINATION

- .1 Workers shall follow decontamination procedures as outlined in the "Code of Practice" and as specified.
- .2 Prior to leaving area where asbestos has been disturbed by method not requiring full containment, vacuum using HEPA filtered vacuum or wet wipe in coveralls. Dispose of coveralls and wiping rags into polyethylene bags as asbestos waste.

3.7 DAILY CLEANING

- .1 Progressively containerize contaminant and contaminated material as work progresses. Do not permit asbestos waste to accumulate.
- .2 Keep work area and contaminated material damp to minimize generation of airborne asbestos fibres.
- .3 Remove asbestos waste from asbestos control area at least once per day.
- .4 Regularly check, clean and replace filters as necessary.

3.8 FINAL CLEANING

- .1 Upon completion of asbestos control work, perform the following:
 - .1 Remove asbestos waste from work site.
 - .2 Vacuum and wash contaminated tools and equipment and bag in clear 2 mil bags.
 - .3 Dispose of non-reusable materials and contaminated materials as asbestos waste.
 - .4 Clean site to original condition.
 - .5 Make good any damage resulting from the asbestos control work, to the satisfaction of the Environmental Consultant.

END OF SECTION

2018-01-22

Use this Section to specify removal of lead-based paints.

This Technical Specification Section contains:

- .1 This Cover Page
- .2 Specification Section Text:
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Removal Contractor Qualifications
 - 1.3 Regulatory Requirements
 - 2. Execution**
 - 2.1 Identification
 - 2.2 Removal Procedure for Lead Based Paints

1. General

1.1 SECTION INCLUDES

- .1 This Section includes requirements for:
 - .1 identification,
 - .2 handling of lead-based paint,

1.2 REMOVAL CONTRACTOR QUALIFICATIONS

- .1 Use individuals experienced in hazardous materials handling, packaging, and transportation.

1.3 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Canadian Environmental Protection Act (Canada)
 - .2 Environmental Contaminants Act (Canada)
 - .3 Environmental Protection and Enhancement Act (Alberta)
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and Regulations
 - .6 Other legislation and regulations which apply to the performance of the work of this section.

2. Execution

2.1 IDENTIFICATION

- .1 The color and locations of the lead containing paint within the Subject Building, are:
 - i. Building 1 – white plaster walls;
 - ii. Building 4 – beige plaster walls and beige tiles
- .2 Lead based paints are to be handled in accordance with all applicable regulations.

2.2 REMOVAL PROCEDURE FOR LEAD BASED PAINTS

- .1 For painted surfaces in non-dispersible form (i.e. surfaces have no flaking paints):
 - .1 Workers performing work on the painted surfaces, shall wear required personal protection equipment (PPE) including eye protection and impervious gloves.

- .2 A zero-VOC (volatile Organic Compounds) solvent such as “Peel Away 1 Heavy-Duty Paint Remover” by Dumond should be used on the lead paint prior disturbing the lead paint.
- .3 Once the paint has been dissolved in the specified area, work on the walls can be started.
- .4 Tools used to apply the solvent can be disposed of as regular waste once the project is complete.

END O SECTION

2014-11-01

This Specification Section contains:

- .1 This Cover Sheet
- .2 Data Sheet - Contract Planning
- .3 Data Sheets - Identification of PCB Ballast Capacitors
- .4 Data Sheet - Sample Schedules
- .5 Data Sheet - TDGR Waste Manifest
- .6 Data Sheet - Reference Documents
- .7 Specification Section Text:
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Related Work Not Provided Under This Contract
 - 1.3 Related Sections
 - 1.4 Allowances
 - 1.5 Reference Documents
 - 1.6 Definitions
 - 1.7 Removal Contractor Qualifications
 - 1.8 Disposal Contractor Qualifications
 - 1.9 Regulatory Requirements
 - 1.10 Handling and Worker Protection
 - 1.11 Coordination
 - 2. Products**
 - 2.1 Materials
 - 3. Execution**
 - 3.1 Identification
 - 3.2 Removal of Luminaire Capacitors and Ballasts
 - 3.3 Removal of Equipment Capacitors
 - 3.4 Preparation for Disposal
 - 3.5 Transportation and Permanent Disposal
 - 3.6 Schedule of PCB Containing Equipment
 - 3.7 Schedule of Possible PCB Containing Equipment

2014-11-01

Related Books, Publications, and Articles:

- .1 Handbook on PCBs in Electrical Equipment

The above noted publication is available without charge from:

Environment Canada
Environment Protection Services
2nd Floor, Twin Atria #2
4999 - 98 Avenue
Edmonton, Alberta T6B 2X3
Telephone: (780) 951-8888

Applicable Legislation and Regulations:

- .1 Environmental Protection and Enhancement Act (Alberta)
- .2 Canadian Environmental Protection Act (Canada)
- .3 Canadian Environmental Protection Act (Canada) - Chlorobiphenyls Regulations (Canada).
- .4 Transportation of Dangerous Goods Act, 1992 (Canada)
- .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations

Data Sheet - Identification of PCB Ballast Capacitors

Section 02 84 16
Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

The following schedule provides a guide to identify ballasts **containing** PCBs. Other ballasts should be considered to **contain** PCBs if they were manufactured prior to July 1, 1980.

Manufacturer	Date Code	Catalogue Code
Aerovox - Canada	AE 7806 or lower code no.	Fifth unit is ' F '
Aerovox - USA	AH 7806 or lower code no.	Fifth unit is ' F '
Allason Fluor. lamps HID lamps containing capacitors		Lower than ' LL ' Type number lacks " N "
CGE	7706 and lower	Ends in T or TW
GE (U.S.A.)		Ends in other than E or W
Philips Fluor. lamp ballasts HID ballasts	1278 or lower	Not marked "NON-PCB" Marked "PCB"
Sola Canada		Contains ' ACA '
Sola - USA	Lower than: 79L311EG	
Universal	Lower than L78	Marked "No-PCB"
Westinghouse	Same as CGE	Same as CGE

Where applicable, only the portions of the codes indicated in the schedule in **bold-face** are important in determining if the product contains PCBs.

Identification may require disassembly of fluorescent lamp ballasts or other lighting systems such as High Intensity Discharge (HID) systems which contain capacitors that are open to view.

Aerovox codes are located on labels attached to capacitors.

Data Sheet - Identification of PCB Ballast Capacitors

Section 02 84 16
Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

Allanson fluorescent lamp ballast catalogue codes are stamped on the nameplate located on the end of ballasts.

Canadian General Electric codes are located on name plates attached to ballasts. Date codes are stamped on nameplates or on reverse side of ballast housing.

Philips date codes are stamped onto ballast housings, on a tab on the side, or on the side facing the ceiling.

Sola (USA) ballasts have nameplates affixed to ballast housings.

Universal high power ballasts are identified by a date code located on the side of the ballast cover opposite the company label.

Data Sheet - Sample Schedules

Section 02 84 16
Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

3.6 SCHEDULE OF PCB CONTAINING EQUIPMENT

No PCB containing material was identified in accessible areas.

3.7 SCHEDULE OF POSSIBLE PCB CONTAINING EQUIPMENT

Location	PCB Item	Quantity	Equipment Description
Building 4			
Entrance Stairwell	FFB	2	Light Ballast

Abbreviations:

FFB Fluorescent Fixture Ballast

2014-11-01

Prior to transporting hazardous waste from the site of origin, the waste generator is required to complete a Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. The owner of the property from which PCB waste is removed is considered to be the **waste generator**.

Prior to completing the manifest the waste generator must obtain a "Provincial Generator Registration Number" by applying to:

Alberta Environment
Industrial Program Development Branch
4th Floor, Oxbridge Place
9820-106 Street
Edmonton, Alberta T5K 2J6
Telephone: (780) 427-5883

Contact the above also for information on completion of hazardous waste generator application form.

The following information is required to complete the TDGR Waste Manifest:

- .1 Receiving Site: Alberta Special Waste Treatment Centre, Swan Hills, Alberta, or other approved site.
- .2 Consignor Provincial Number: Application to Alberta Environment is required to obtain this number for each site.
- .3 Physical State: identify if material is in Solid (SOL) or Liquid (LIQ) form.
- .4 Shipping Name: Waste - Polychlorinated Biphenyls.
- .5 TDGA Product Identification Numbers: UN2315.
- .6 Classification: 9.1(9.2)
- .7 Packing Group: II
- .8 Packaging Code (Int/Ext), following are the available codes:

- | | |
|----|---------------------------------|
| 01 | Drum |
| 02 | Tank |
| 03 | Bulk |
| 04 | Carton |
| 05 | Bag |
| 06 | Roll-off (Container on Chassis) |
| 07 | Other |

Transportation Canada booklet "User's Guide for the Hazardous Waste Manifest (Transportation of Dangerous Goods Act)" may be a useful guide to aid in completing the manifest.

All persons involved in the handling, packing, loading, transportation, unloading, unpacking, and disposal of PCB waste must be trained in accordance with the Dangerous Goods Transportation and Handling Act.

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END OF DATA SHEETS

1. General

1.1 SECTION INCLUDES

.1 This Section includes requirements for:

- .1 identification,
- .2 removal,
- .3 preparation for disposal,
- .4 transportation,
- .5 temporary storage
- .6 permanent disposal,

of electrical capacitors and ballasts containing polychlorinated biphenyl liquids (PCBs).

1.2 RELATED SECTIONS

.1 Replacement of ballasts and capacitors: Division 26.

1.3 REFERENCE DOCUMENTS

.1 Perform work in accordance with the recommendations in the following Environment Canada publications:

- .1 Handbook on PCBs in Electrical Equipment by Environment Canada.
- .2 Identification of Fluorescent Lamp Ballasts Containing PCBs, EPS 2/CG/2, April 1986, by Environment Canada.

1.4 DEFINITIONS

.1 **Removal** means detachment of PCB containing capacitors and ballasts from applicable fixtures and includes preparation for disposal as described in this Section.

.2 **Disposal** means transportation to specified disposal facility for permanent disposal, or to an approved site for temporary storage and subsequent transportation to the specified permanent disposal facility.

1.5 REMOVAL CONTRACTOR QUALIFICATIONS

.1 Persons employed for the removal of capacitors and other energized electrical equipment shall be qualified electricians.

- .2 Where contact with liquid PCB is possible, personnel shall be instructed in handling procedures, safety precautions, use of safety equipment and applicable Alberta and Federal legislation and regulation.

1.6 DISPOSAL CONTRACTOR QUALIFICATIONS

- .1 Handling and transportation of hazardous wastes shall be performed by a company registered as a carrier with Alberta Environment. A listing of such companies may be obtained from the Alberta Environment. Telephone: (780) 427-5883.
- .2 Submit proof that all persons involved in handling, packing, loading, transportation, unloading, unpacking and disposal of PCB waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.7 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Canadian Environmental Protection Act (Canada)
 - .2 Canadian Environmental Protection Act - Chlorobiphenyls Regulations (Canada)
 - .3 Environmental Protection and Enhancement Act (Alberta)
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations
 - .6 Other legislation and regulations which apply to the performance of the work of this section.

1.8 HANDLING AND WORKER PROTECTION

- .1 Require workers to wear PCB resistant gloves in addition to normal work clothing where exposure risk is low.
- .2 Provide workers with additional protective clothing and equipment where contact with liquid PCBs may occur. Provide clothing and equipment appropriate for the potential level of exposure.

1.9 COORDINATION

- .1 Coordinate work of this Section with installation of replacement capacitors and ballasts specified in Division 26.
- .2 Coordinate work of this Section with loading and transportation of PCB capacitors and ballasts which is being performed under separate contract.

2. Products

2.1 MATERIALS

.1 Absorbent Material: PCB absorbent material which will create a quasi-solid product which can be swept or shovelled. Acceptable materials include:

- | | | | | | |
|----|--------------------|----|---------------|-----|-------------|
| .1 | Sawdust | .5 | Inbiber Beads | .9 | Oil-Dry |
| .2 | Vermiculite | .6 | Hy-Dry | .10 | Conwed |
| .3 | Activated Charcoal | .7 | Diasorb | .11 | 3-M matting |
| .4 | Oclansorb | .8 | Stay-Dry | .12 | Graboil |

.2 Disposal Drums: to CAN/CGSB-43.150-97, steel drum (1A2), 205 litre capacity, minimum 1.2 mm thick sheet steel, fitted with removable steel lids, with lid gaskets made of PCB resistant materials and meeting Transportation of Dangerous Goods Regulations and applicable provincial requirements.

.3 Plastic Bags: to CAN/CGSB-43.150-97, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.

.4 Solvent: following solvents are acceptable:

- .1 Varsol
- .2 Kerosene
- .3 turpentine
- .4 Number 1 fuel oil
- .5 1,1,1-trichloroethane

3. Execution

3.1 IDENTIFICATION

.1 Inspect luminaires listed in "Schedule of Possible PCB Containing Equipment" to identify capacitors and ballasts containing PCBs. Take care to accurately identify capacitors and ballasts as PCB type or non-PCB type.

3.2 REMOVAL OF LUMINAIRE CAPACITORS AND BALLASTS

- .1 Remove all PCB containing capacitors and ballasts as follows:
 - .1 Fluorescent Luminaires and HID Luminaires with Potted Ballasts: Remove entire ballast, including capacitor.
 - .2 HID luminaires with Non-potted Ballasts: Remove capacitor only. If capacitor is leaking also dispose of ballast.
- .2 Clean any black residue from luminaires using rags and solvent. Black residue may contain PCBs. Dispose of rags as PCB waste.
- .3 Dispose of non-PCB containing ballasts as construction waste.

3.3 REMOVAL OF EQUIPMENT CAPACITORS

- .1 Remove PCB containing capacitors from equipment.
- .2 Notify Province in writing of equipment which may be contaminated with PCB.
- .3 Remove and dispose of contaminated equipment as PCB waste if directed by Province in writing. This work will be considered a change in the work and valued in accordance with the General Conditions of Contract.

3.4 PREPARATION FOR DISPOSAL

- .1 Place contaminated materials into plastic bags. Close bags securely using specified ties. Handle bags containing material to prevent bag puncture.
- .2 Place minimum 75 mm of absorbent material in bottom of drum.
- .3 Place plastic bags containing contaminated material into disposal drum.
- .4 Place capacitors into drum with terminals facing up.
- .5 Package PCB contaminated gloves, work clothes and rags in plastic bags and place in drums.
- .6 Seal drums and store in a designated storage area pending transportation and disposal.
- .7 Label drums containing liquid PCB, contaminated material and equipment, with a Number 4 - Severe Hazard Label.

- .8 Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act, showing the shipping name (polychlorinated biphenyl), the product identification number (UN2315) and a Class 9 label.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL

- .1 Transport waste PCBs in accordance with the Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation.
- .3 Transport hazardous waste materials in properly placarded vehicles equipped with a rain and windproof box.
- .4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. Provide the Minister with a copy of each waste manifest.
- .5 Arrange and pay for permanent disposal of PCBs and PCB contaminated material in an environmentally safe manner at the Alberta Special Waste Treatment Centre, Swan Hills, Alberta in accordance with Alberta legislation and regulations.

3.6 SCHEDULE OF PCB CONTAINING EQUIPMENT

- .1 Following items are suspected to contain PCBs. Remove items confirmed to contain PCBs from equipment and dispose of as PCB waste.

Location	PCB Item	Quantity	Equipment Description
Building 4	FFB	2	Light Ballasts

Abbreviations:
FFB Fluorescent Fixture Ballast

END OF SECTION

2018-01-22

This Technical Specification Section contains:

- .1 This Cover Sheet
- .2 Specification Text
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Removal Contractors Qualifications
 - 1.3 Disposal Contractor Qualifications
 - 1.4 Regulatory Requirements
 - 2. Products**
Not Used
 - 3. Execution**
 - 3.1 Mercury-Containing Equipment

1. General

1.1 SECTION INCLUDES

- .1 This Section includes requirements for identification removal, preparation for disposal, transportation, and permanent disposal of mercury components.

1.2 REMOVAL CONTRACTOR QUALIFICATIONS

- .1 Use qualified electrician for removal, packaging and transportation arrangements for disposal of mercury-containing switches, thermostats and equipment.

1.3 DISPOSAL CONTRACTOR QUALIFICATIONS

- .1 Handling and transportation of mercury components shall be performed by a hazardous waste company registered as a carrier with Alberta Environment and Parks. A listing of qualified companies may be obtained from the Land Policy Branch. Telephone: (780) 427-3081.
- .2 Carrier of hazardous wastes shall have successfully completed a Transportation of Dangerous Goods course acceptable to the authority having jurisdiction within the past three years.

1.4 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Environmental Contaminants Act (Canada)
 - .2 Environmental Protection and Enhancement Act (Alberta)
 - .3 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .4 Dangerous Goods Transportation and Handling Act (Alberta) and regulations
 - .5 Other legislation and regulations which apply to the performance of the work of this section.

2. Products (Not Used)

3. Execution

3.1 MERCURY-CONTAINING EQUIPMENT

- .1 Approximately four (4) fluorescent light tubes containing mercury vapour have been identified throughout the entrance stairwell of Building 4 of the Grierson Center.
- .2 Place all mercury-containing components into an impervious container packed with absorptive material.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL

- .1 Transport waste mercury components in accordance with the Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation.
- .3 Transport hazardous waste materials in properly placarded vehicles.
- .4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. Provide Alberta Infrastructure and EHS Partnerships Ltd. with a copy of each waste manifest.
- .5 Use an approved hazardous waste company to transport and permanently dispose of mercury-containing components.

END OF SECTION

This Technical Specification Section contains:

- .1 This Cover Sheet
- .2 Data Sheet - General
- .3 Specification Section Text:
 - 1. General**
 - 1.1 Intent
 - 1.2 Reference Documents
 - 1.3 Definitions
 - 1.4 Worker Qualifications
 - 1.5 Submittals
 - 1.6 Regulatory Requirements
 - 1.7 Protection of Personnel
 - 2. Products**
 - 2.1 Material and Equipment
 - 2.2 Asbestos Disposal Containers
 - 2.3 Warning Signs
 - 3. Execution**
 - 3.1 Preparation
 - 3.2 Asbestos
 - 3.3 Preparation for Asbestos Disposal
 - 3.4 Disposal of Normal Construction Waste
 - 3.5 Transportation and Permanent Disposal of Asbestos Waste
 - 3.6 Worker Decontamination
 - 3.7 Daily Cleaning
 - 3.8 Final Cleaning

1. General

1.1 INTENT

- .1 This Section specifies general requirements common to the working with or around the asbestos found for the wheelchair replacement project. The sections described below are for the low risk work required when drilling into asbestos containing mud located in building 4. Work that may impact the identified asbestos-containing material include; securing new anchors, installing new conduit clips, installing new conduit runs, and removing existing anchors and clips.

1.2 REFERENCE DOCUMENTS

- .1 Alberta Asbestos Abatement Manual, Current Edition, available online from Alberta Labour.
- .2 Alberta User Guide for Waste Managers, available online from Alberta Environment and Parks.
- .3 Guidelines for the Disposal of Asbestos Waste, available online from Alberta Environment and Parks.
- .3 CAN/CGSB-1.205-03, Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .4 CAN/CGSB-43.150-97, Performance Packaging for Transportation of Dangerous Goods.

1.3 DEFINITIONS

- .1 Asbestos Control Work: means asbestos containment procedures, removal or encapsulation, and disposal of asbestos or materials containing asbestos, as specified.
- .2 Asbestos Control Area: means space in which asbestos control work is being performed and to which general access is prohibited.
- .3 Asbestos Waste: means removed contaminant and contaminated materials or products.
- .4 Contaminant: means asbestos material.
- .5 Contaminated: describes products, by-products, or material containing, or affected by, asbestos or removal thereof.
- .6 Full Containment Procedures: means construction of temporary facilities and following of procedures to contain asbestos fibres, as specified in Section 02 82 05.
- .7 HEPA Filter: high efficiency particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for powered respirators, vacuums, vacuum trucks and negative air units.
- .8 P100 Filter: high efficiency, oil proof, particulate air filter, removing not less than 99.97% of particles measuring 0.3 microns and larger, for non-powered air purifying respirators.

1.4 WORKER QUALIFICATIONS

- .1 Workers involved in low or moderate-risk asbestos abatement projects do not require an asbestos worker card but should be trained with the following:
 - .1 health hazards associated with exposure to asbestos.
 - .2 responsibility of workers, employers, contractors and suppliers under the Occupational Health and Safety Act.
 - .3 asbestos requirements in Part 4 of the OHS Code.
 - .4 safe work procedures related to the work.
 - .5 how to properly wear, use and maintain personal protective equipment that will be used at the work site.
- .2 At least one employee who will be performing the work shall have completed a standard first aid course and meet the minimum requirements for first aiders as required by Alberta Occupational Health and Safety Act.
- .3 Persons involved in loading, transportation, unloading, and disposal of asbestos waste shall have been trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.5 SUBMITTALS

- .1 This Section specifies general requirements common to all asbestos control work. The documentation listed below should be present on site during any asbestos control work and be provided to the Environmental Consultant if air monitoring is deemed required.
 - .1 Comply with the requirements of this Section and the Alberta Abatement Manual. Provide submittals to Environmental Consultant for review and approval prior to start of asbestos control work.
 - .2 Submit copy of test results documenting Dioctyl Phthalate (DOP) testing or its equivalent, of HEPA filtered vacuums and negative air units.
 - .3 Submit certification that HEPA filtered vacuums required for this contract meet specified HEPA filter designation for component filter assemblies.
 - .4 Submit disposal procedure for contaminant and contaminated waste.
 - .5 Submit a copy of "Code of Practice" for the work, required by the Occupational Health and Safety Act.
 - .6 Submit a copy of worker protection information which will be provided to employees.
 - .7 Submit plan for air monitoring to ensure use of proper respirators within work area.
 - .8 Submit proof that Occupational Health and Safety has been notified, a minimum of 72 hours before asbestos control work is to be performed. The OHS Contact Center telephone number is 1-866-415-8690.

- .9 Submit proof that all persons involved in the handling, packing, loading, transportation, unloading, and disposal of asbestos waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.6 REGULATORY REQUIREMENTS

- .1 Comply with the following legislation and regulations:
 - .1 Environmental Protection Act (Canada).
 - .2 Environmental Protection and Enhancement Act (Alberta).
 - .3 Occupational Health and Safety Act, Regulation and Code (Alberta).
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada).
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations.
 - .6 Other legislation and regulations which apply to the performance of asbestos control work.

1.7 PROTECTION OF PERSONNEL

- .1 Provide workers with respirators and hooded disposable coveralls conforming to Occupational Health and Safety Regulations for the airborne asbestos fibre levels that are present during asbestos control work.
- .2 Do not permit smoking, eating or drinking in work area.
- .3 Provide the following to employees involved in asbestos control work:
 - .1 written information describing potential health hazards related to exposure to asbestos fibre.
 - .2 written instructions describing safe work procedures.
- .4 Where full containment procedures are not required, do the following:
 - .1 comply with regulatory requirements.
 - .2 provide workers with not less than a non-powered pre-fitted half-mask respirator equipped with P100 filters and hooded disposable coveralls. Coveralls shall fit snugly around neck, wrists and ankles.
 - .3 allow no one in the removal area during asbestos control work unless wearing disposable coveralls and respirator equipped with P100 filters or as required to protect against reported fibre levels.

- .5 Provide the following safety equipment for Environmental Consultant, as required to permit ready and safe access to the work:
 - .1 disposable coveralls made of material that resists penetration by asbestos fibres.
 - .2 rubber boots or easily decontaminated footwear.
 - .3 caps.
 - .4 eye protection.
 - .5 gloves.
 - .6 hard hats.
 - .7 non-powered half mask respirator equipped with P100 filters (minimum) or as required to protect against reported fibre levels.

2. Products

2.1 MATERIAL AND EQUIPMENT

- .1 Water to dampen the material prior to work.
- .2 Vacuums: HEPA filtered wet/dry type, with accessories adequate to perform cleanup work.

2.2 ASBESTOS DISPOSAL CONTAINERS

- .1 Plastic Bags: to CAN/CGSB-43.150, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50 kg.
- .2 Sheet Polyethylene: two separate layers, minimum 150 micrometer thick, each layer sealed with water-resistant plastic duct tape.
- .3 Label containers with labels stating "CONTAINS ASBESTOS, CANCER HAZARD, AVOID BREATHING DUST".
- .4 Duct Tape: Good quality, water resistant plastic type.

2.3 WARNING SIGNS

- .1 Provide warning signs which state as follows and provide the name of a contact person on-site:
 - .1 caution asbestos dust hazard.
 - .2 avoid breathing dust, wear protective equipment
 - .3 breathing asbestos dust may cause cancer
 - .4 entry is prohibited except to authorized persons.

.5 drinking, eating and smoking are prohibited in this area.

3. Execution

3.1 PREPARATION

.1 Asbestos control work may commence only after the following have been completed:

- .1 existing property, including non-removable equipment and furnishings, surfaces and finishes, have been protected from damage and contamination due to asbestos control work.
- .2 barriers are in place and work area has been isolated.
- .3 warning signs have been placed around perimeter of asbestos control area and at each potential entrance to the area.
- .4 Notice of project has been filed with Workplace Health and Safety and an acceptance has been granted.

3.2 ASBESTOS HANDLING

- .1 Workers performing work on asbestos-containing materials, shall wear required personal protection equipment (PPE) including non-powered half-mask respirator equipped with P100 filters, disposable coveralls made of material that resists penetration by dust, eye protection and impervious gloves.
- .2 Before the work begins a HEPA filtered vacuum, and a pail of soap and warm water with disposable wiping rags (to use as a wash-up station), 150 micrometre polyethylene drop sheet, and good quality duct tape are required.
- .3 Sprinkle debris with water to prevent dust. Do not cause flooding, contaminated runoff or icing. Do not allow waste material, rubbish, and windblown debris to reach and contaminate adjacent properties.
- .4 During the work, the HEPA filtered vacuum should be held adjacent to any penetrations being made into the surface in order to collect majority of the asbestos dust being created.
- .5 Once the work is completed, fully seal the first drop sheet in two 6 mil polyethylene asbestos disposal bags and seal with duct tape.
- .6 Remove disposable coveralls and gloves when leaving work area and fully seal the first coveralls and gloves in two 6 mil polyethylene asbestos disposal bags and seal with duct tape.
- .7 Prior to removal of respirator, workers wash head, face and exterior of respirator thoroughly in wash up station, prior to removing the respirator.

3.3 PREPARATION FOR ASBESTOS DISPOSAL

- .1 Prepare contaminated materials for disposal as follows:
 - .1 place in double bagged plastic asbestos disposal bags or inside disposable drums with tight fitting lids.
 - .2 wrap bulk materials that do not lend themselves to disposal in plastic bags or drums, in sheet polyethylene. (2 separately sealed layers)
 - .3 the resulting package must be constructed, filled and closed so that, under normal conditions of handling and transport, there will be no discharge, emission or escape of the dangerous goods from the package or small container that could constitute a danger to public safety.
- .2 Transfer asbestos waste containers and normal construction waste from asbestos control area for disposal, in accordance with procedures described in the following documents.
 - .1 Alberta Asbestos Abatement Manual, Current Edition, available online from Alberta Labour.
 - .2 Guidelines for the Disposal of Asbestos Waste, available online from Alberta Environment and Parks.
 - .3 Where more than one document addresses an issue, the most stringent requirements shall apply.
- .3 Treat contaminated water as asbestos waste.

3.4 DISPOSAL OF NORMAL CONSTRUCTION WASTE

- .1 This article applies to materials not readily prepared for asbestos disposal as specified, and being capable of thorough cleaning, for example, bulky mechanical equipment.
- .2 Clean materials and equipment until free of visible asbestos, wash, and dip in or spray with asbestos sealer.
- .3 Dispose of as normal construction waste.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL OF ASBESTOS WASTE

- .1 Transport asbestos waste in accordance with Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation. Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act showing the shipping name white Asbestos and product identification number UN2590).
- .3 If spill, emission or discharge of waste asbestos is in excess of 25 kg (or 25L) from the transport unit, immediately report the incident to the local police and appropriate provincial authority at 1-800-272-9600.

- .4 Place asbestos waste containers intact in excavated area. Do not dump or throw containers from truck. Repackage contents of containers that have broken open, in accordance with requirements for preparation for asbestos disposal.
- .5 Arrange for asbestos waste to be covered with soil.

3.6 WORKER DECONTAMINATION

- .1 Workers shall follow decontamination procedures as outlined in the "Code of Practice" and as specified.
- .2 Prior to leaving area where asbestos has been disturbed by method not requiring full containment, vacuum using HEPA filtered vacuum or wet wipe in coveralls. Dispose of coveralls and wiping rags into polyethylene bags as asbestos waste.

3.7 DAILY CLEANING

- .1 Progressively containerize contaminant and contaminated material as work progresses. Do not permit asbestos waste to accumulate.
- .2 Keep work area and contaminated material damp to minimize generation of airborne asbestos fibres.
- .3 Remove asbestos waste from asbestos control area at least once per day.
- .4 Regularly check, clean and replace filters as necessary.

3.8 FINAL CLEANING

- .1 Upon completion of asbestos control work, perform the following:
 - .1 Remove asbestos waste from work site.
 - .2 Vacuum and wash contaminated tools and equipment and bag in clear 2 mil bags.
 - .3 Dispose of non-reusable materials and contaminated materials as asbestos waste.
 - .4 Clean site to original condition.
 - .5 Make good any damage resulting from the asbestos control work, to the satisfaction of the Environmental Consultant.

END OF SECTION

2018-01-22

Use this Section to specify removal of lead-based paints.

This Technical Specification Section contains:

- .1 This Cover Page
- .2 Specification Section Text:
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Removal Contractor Qualifications
 - 1.3 Regulatory Requirements
 - 2. Execution**
 - 2.1 Identification
 - 2.2 Removal Procedure for Lead Based Paints

1. General

1.1 SECTION INCLUDES

- .1 This Section includes requirements for:
 - .1 identification,
 - .2 handling of lead-based paint,

1.2 REMOVAL CONTRACTOR QUALIFICATIONS

- .1 Use individuals experienced in hazardous materials handling, packaging, and transportation.

1.3 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Canadian Environmental Protection Act (Canada)
 - .2 Environmental Contaminants Act (Canada)
 - .3 Environmental Protection and Enhancement Act (Alberta)
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and Regulations
 - .6 Other legislation and regulations which apply to the performance of the work of this section.

2. Execution

2.1 IDENTIFICATION

- .1 The color and locations of the lead containing paint within the Subject Building, are:
 - i. Building 1 – white plaster walls;
 - ii. Building 4 – beige plaster walls and beige tiles
- .2 Lead based paints are to be handled in accordance with all applicable regulations.

2.2 REMOVAL PROCEDURE FOR LEAD BASED PAINTS

- .1 For painted surfaces in non-dispersible form (i.e. surfaces have no flaking paints):
 - .1 Workers performing work on the painted surfaces, shall wear required personal protection equipment (PPE) including eye protection and impervious gloves.

- .2 A zero-VOC (volatile Organic Compounds) solvent such as “Peel Away 1 Heavy-Duty Paint Remover” by Dumond should be used on the lead paint prior disturbing the lead paint.
- .3 Once the paint has been dissolved in the specified area, work on the walls can be started.
- .4 Tools used to apply the solvent can be disposed of as regular waste once the project is complete.

END O SECTION

2014-11-01

This Specification Section contains:

- .1 This Cover Sheet
- .2 Data Sheet - Contract Planning
- .3 Data Sheets - Identification of PCB Ballast Capacitors
- .4 Data Sheet - Sample Schedules
- .5 Data Sheet - TDGR Waste Manifest
- .6 Data Sheet - Reference Documents
- .7 Specification Section Text:
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Related Work Not Provided Under This Contract
 - 1.3 Related Sections
 - 1.4 Allowances
 - 1.5 Reference Documents
 - 1.6 Definitions
 - 1.7 Removal Contractor Qualifications
 - 1.8 Disposal Contractor Qualifications
 - 1.9 Regulatory Requirements
 - 1.10 Handling and Worker Protection
 - 1.11 Coordination
 - 2. Products**
 - 2.1 Materials
 - 3. Execution**
 - 3.1 Identification
 - 3.2 Removal of Luminaire Capacitors and Ballasts
 - 3.3 Removal of Equipment Capacitors
 - 3.4 Preparation for Disposal
 - 3.5 Transportation and Permanent Disposal
 - 3.6 Schedule of PCB Containing Equipment
 - 3.7 Schedule of Possible PCB Containing Equipment

2014-11-01

Related Books, Publications, and Articles:

- .1 Handbook on PCBs in Electrical Equipment

The above noted publication is available without charge from:

Environment Canada
Environment Protection Services
2nd Floor, Twin Atria #2
4999 - 98 Avenue
Edmonton, Alberta T6B 2X3
Telephone: (780) 951-8888

Applicable Legislation and Regulations:

- .1 Environmental Protection and Enhancement Act (Alberta)
- .2 Canadian Environmental Protection Act (Canada)
- .3 Canadian Environmental Protection Act (Canada) - Chlorobiphenyls Regulations (Canada).
- .4 Transportation of Dangerous Goods Act, 1992 (Canada)
- .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations

Data Sheet - Identification of PCB Ballast Capacitors

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Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

The following schedule provides a guide to identify ballasts **containing** PCBs. Other ballasts should be considered to **contain** PCBs if they were manufactured prior to July 1, 1980.

Manufacturer	Date Code	Catalogue Code
Aerovox - Canada	AE 7806 or lower code no.	Fifth unit is ' F '
Aerovox - USA	AH 7806 or lower code no.	Fifth unit is ' F '
Allason Fluor. lamps HID lamps containing capacitors		Lower than ' LL ' Type number lacks " N "
CGE	7706 and lower	Ends in T or TW
GE (U.S.A.)		Ends in other than E or W
Philips Fluor. lamp ballasts HID ballasts	1278 or lower	Not marked "NON-PCB" Marked "PCB"
Sola Canada		Contains ' ACA '
Sola - USA	Lower than: 79L311EG	
Universal	Lower than L78	Marked "No-PCB"
Westinghouse	Same as CGE	Same as CGE

Where applicable, only the portions of the codes indicated in the schedule in **bold-face** are important in determining if the product contains PCBs.

Identification may require disassembly of fluorescent lamp ballasts or other lighting systems such as High Intensity Discharge (HID) systems which contain capacitors that are open to view.

Aerovox codes are located on labels attached to capacitors.

Data Sheet - Identification of PCB Ballast Capacitors

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Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

Allanson fluorescent lamp ballast catalogue codes are stamped on the nameplate located on the end of ballasts.

Canadian General Electric codes are located on name plates attached to ballasts. Date codes are stamped on nameplates or on reverse side of ballast housing.

Philips date codes are stamped onto ballast housings, on a tab on the side, or on the side facing the ceiling.

Sola (USA) ballasts have nameplates affixed to ballast housings.

Universal high power ballasts are identified by a date code located on the side of the ballast cover opposite the company label.

Data Sheet - Sample Schedules

Section 02 84 16
Removal and Disposal of PCB
Capacitors and Ballasts

2014-11-01

3.6 SCHEDULE OF PCB CONTAINING EQUIPMENT

No PCB containing material was identified in accessible areas.

3.7 SCHEDULE OF POSSIBLE PCB CONTAINING EQUIPMENT

Location	PCB Item	Quantity	Equipment Description
Building 4			
Entrance Stairwell	FFB	2	Light Ballast

Abbreviations:

FFB Fluorescent Fixture Ballast

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Prior to transporting hazardous waste from the site of origin, the waste generator is required to complete a Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. The owner of the property from which PCB waste is removed is considered to be the **waste generator**.

Prior to completing the manifest the waste generator must obtain a "Provincial Generator Registration Number" by applying to:

Alberta Environment
Industrial Program Development Branch
4th Floor, Oxbridge Place
9820-106 Street
Edmonton, Alberta T5K 2J6
Telephone: (780) 427-5883

Contact the above also for information on completion of hazardous waste generator application form.

The following information is required to complete the TDGR Waste Manifest:

- .1 Receiving Site: Alberta Special Waste Treatment Centre, Swan Hills, Alberta, or other approved site.
- .2 Consignor Provincial Number: Application to Alberta Environment is required to obtain this number for each site.
- .3 Physical State: identify if material is in Solid (SOL) or Liquid (LIQ) form.
- .4 Shipping Name: Waste - Polychlorinated Biphenyls.
- .5 TDGA Product Identification Numbers: UN2315.
- .6 Classification: 9.1(9.2)
- .7 Packing Group: II
- .8 Packaging Code (Int/Ext), following are the available codes:

- | | |
|----|---------------------------------|
| 01 | Drum |
| 02 | Tank |
| 03 | Bulk |
| 04 | Carton |
| 05 | Bag |
| 06 | Roll-off (Container on Chassis) |
| 07 | Other |

Transportation Canada booklet "User's Guide for the Hazardous Waste Manifest (Transportation of Dangerous Goods Act)" may be a useful guide to aid in completing the manifest.

All persons involved in the handling, packing, loading, transportation, unloading, unpacking, and disposal of PCB waste must be trained in accordance with the Dangerous Goods Transportation and Handling Act.

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END OF DATA SHEETS

1. General

1.1 SECTION INCLUDES

.1 This Section includes requirements for:

- .1 identification,
- .2 removal,
- .3 preparation for disposal,
- .4 transportation,
- .5 temporary storage
- .6 permanent disposal,

of electrical capacitors and ballasts containing polychlorinated biphenyl liquids (PCBs).

1.2 RELATED SECTIONS

.1 Replacement of ballasts and capacitors: Division 26.

1.3 REFERENCE DOCUMENTS

.1 Perform work in accordance with the recommendations in the following Environment Canada publications:

- .1 Handbook on PCBs in Electrical Equipment by Environment Canada.
- .2 Identification of Fluorescent Lamp Ballasts Containing PCBs, EPS 2/CG/2, April 1986, by Environment Canada.

1.4 DEFINITIONS

.1 **Removal** means detachment of PCB containing capacitors and ballasts from applicable fixtures and includes preparation for disposal as described in this Section.

.2 **Disposal** means transportation to specified disposal facility for permanent disposal, or to an approved site for temporary storage and subsequent transportation to the specified permanent disposal facility.

1.5 REMOVAL CONTRACTOR QUALIFICATIONS

.1 Persons employed for the removal of capacitors and other energized electrical equipment shall be qualified electricians.

- .2 Where contact with liquid PCB is possible, personnel shall be instructed in handling procedures, safety precautions, use of safety equipment and applicable Alberta and Federal legislation and regulation.

1.6 DISPOSAL CONTRACTOR QUALIFICATIONS

- .1 Handling and transportation of hazardous wastes shall be performed by a company registered as a carrier with Alberta Environment. A listing of such companies may be obtained from the Alberta Environment. Telephone: (780) 427-5883.
- .2 Submit proof that all persons involved in handling, packing, loading, transportation, unloading, unpacking and disposal of PCB waste are trained in accordance with the Dangerous Goods Transportation and Handling Act.

1.7 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Canadian Environmental Protection Act (Canada)
 - .2 Canadian Environmental Protection Act - Chlorobiphenyls Regulations (Canada)
 - .3 Environmental Protection and Enhancement Act (Alberta)
 - .4 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .5 Dangerous Goods Transportation and Handling Act (Alberta) and regulations
 - .6 Other legislation and regulations which apply to the performance of the work of this section.

1.8 HANDLING AND WORKER PROTECTION

- .1 Require workers to wear PCB resistant gloves in addition to normal work clothing where exposure risk is low.
- .2 Provide workers with additional protective clothing and equipment where contact with liquid PCBs may occur. Provide clothing and equipment appropriate for the potential level of exposure.

1.9 COORDINATION

- .1 Coordinate work of this Section with installation of replacement capacitors and ballasts specified in Division 26.
- .2 Coordinate work of this Section with loading and transportation of PCB capacitors and ballasts which is being performed under separate contract.

2. Products

2.1 MATERIALS

.1 Absorbent Material: PCB absorbent material which will create a quasi-solid product which can be swept or shovelled. Acceptable materials include:

- | | | | | | |
|----|--------------------|----|---------------|-----|-------------|
| .1 | Sawdust | .5 | Inbiber Beads | .9 | Oil-Dry |
| .2 | Vermiculite | .6 | Hy-Dry | .10 | Conwed |
| .3 | Activated Charcoal | .7 | Diasorb | .11 | 3-M matting |
| .4 | Oclansorb | .8 | Stay-Dry | .12 | Graboil |

.2 Disposal Drums: to CAN/CGSB-43.150-97, steel drum (1A2), 205 litre capacity, minimum 1.2 mm thick sheet steel, fitted with removable steel lids, with lid gaskets made of PCB resistant materials and meeting Transportation of Dangerous Goods Regulations and applicable provincial requirements.

.3 Plastic Bags: to CAN/CGSB-43.150-97, minimum 150 micrometer thick sheet polyethylene. Bag seams shall be sufficiently strong to resist pressure and shocks that occur under normal conditions of transport. Designed and manufactured to contain a maximum net mass of 50kg.

.4 Solvent: following solvents are acceptable:

- .1 Varsol
- .2 Kerosene
- .3 turpentine
- .4 Number 1 fuel oil
- .5 1,1,1-trichloroethane

3. Execution

3.1 IDENTIFICATION

.1 Inspect luminaires listed in "Schedule of Possible PCB Containing Equipment" to identify capacitors and ballasts containing PCBs. Take care to accurately identify capacitors and ballasts as PCB type or non-PCB type.

3.2 REMOVAL OF LUMINAIRE CAPACITORS AND BALLASTS

- .1 Remove all PCB containing capacitors and ballasts as follows:
 - .1 Fluorescent Luminaires and HID Luminaires with Potted Ballasts: Remove entire ballast, including capacitor.
 - .2 HID luminaires with Non-potted Ballasts: Remove capacitor only. If capacitor is leaking also dispose of ballast.
- .2 Clean any black residue from luminaires using rags and solvent. Black residue may contain PCBs. Dispose of rags as PCB waste.
- .3 Dispose of non-PCB containing ballasts as construction waste.

3.3 REMOVAL OF EQUIPMENT CAPACITORS

- .1 Remove PCB containing capacitors from equipment.
- .2 Notify Province in writing of equipment which may be contaminated with PCB.
- .3 Remove and dispose of contaminated equipment as PCB waste if directed by Province in writing. This work will be considered a change in the work and valued in accordance with the General Conditions of Contract.

3.4 PREPARATION FOR DISPOSAL

- .1 Place contaminated materials into plastic bags. Close bags securely using specified ties. Handle bags containing material to prevent bag puncture.
- .2 Place minimum 75 mm of absorbent material in bottom of drum.
- .3 Place plastic bags containing contaminated material into disposal drum.
- .4 Place capacitors into drum with terminals facing up.
- .5 Package PCB contaminated gloves, work clothes and rags in plastic bags and place in drums.
- .6 Seal drums and store in a designated storage area pending transportation and disposal.
- .7 Label drums containing liquid PCB, contaminated material and equipment, with a Number 4 - Severe Hazard Label.

- .8 Each container must be marked in accordance with the Dangerous Goods Transportation and Handling Act, showing the shipping name (polychlorinated biphenyl), the product identification number (UN2315) and a Class 9 label.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL

- .1 Transport waste PCBs in accordance with the Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation.
- .3 Transport hazardous waste materials in properly placarded vehicles equipped with a rain and windproof box.
- .4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. Provide the Minister with a copy of each waste manifest.
- .5 Arrange and pay for permanent disposal of PCBs and PCB contaminated material in an environmentally safe manner at the Alberta Special Waste Treatment Centre, Swan Hills, Alberta in accordance with Alberta legislation and regulations.

3.6 SCHEDULE OF PCB CONTAINING EQUIPMENT

- .1 Following items are suspected to contain PCBs. Remove items confirmed to contain PCBs from equipment and dispose of as PCB waste.

Location	PCB Item	Quantity	Equipment Description
Building 4	FFB	2	Light Ballasts

Abbreviations:
FFB Fluorescent Fixture Ballast

END OF SECTION

2018-01-22

This Technical Specification Section contains:

- .1 This Cover Sheet
- .2 Specification Text
 - 1. General**
 - 1.1 Section Includes
 - 1.2 Removal Contractors Qualifications
 - 1.3 Disposal Contractor Qualifications
 - 1.4 Regulatory Requirements
 - 2. Products**
Not Used
 - 3. Execution**
 - 3.1 Mercury-Containing Equipment

1. General

1.1 SECTION INCLUDES

- .1 This Section includes requirements for identification removal, preparation for disposal, transportation, and permanent disposal of mercury components.

1.2 REMOVAL CONTRACTOR QUALIFICATIONS

- .1 Use qualified electrician for removal, packaging and transportation arrangements for disposal of mercury-containing switches, thermostats and equipment.

1.3 DISPOSAL CONTRACTOR QUALIFICATIONS

- .1 Handling and transportation of mercury components shall be performed by a hazardous waste company registered as a carrier with Alberta Environment and Parks. A listing of qualified companies may be obtained from the Land Policy Branch. Telephone: (780) 427-3081.
- .2 Carrier of hazardous wastes shall have successfully completed a Transportation of Dangerous Goods course acceptable to the authority having jurisdiction within the past three years.

1.4 REGULATORY REQUIREMENTS

- .1 Comply with the following:
 - .1 Environmental Contaminants Act (Canada)
 - .2 Environmental Protection and Enhancement Act (Alberta)
 - .3 Transportation of Dangerous Goods Act, 1992 (Canada)
 - .4 Dangerous Goods Transportation and Handling Act (Alberta) and regulations
 - .5 Other legislation and regulations which apply to the performance of the work of this section.

2. Products (Not Used)

3. Execution

3.1 MERCURY-CONTAINING EQUIPMENT

- .1 Approximately four (4) fluorescent light tubes containing mercury vapour have been identified throughout the entrance stairwell of Building 4 of the Grierson Center.
- .2 Place all mercury-containing components into an impervious container packed with absorptive material.

3.5 TRANSPORTATION AND PERMANENT DISPOSAL

- .1 Transport waste mercury components in accordance with the Alberta and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation.
- .3 Transport hazardous waste materials in properly placarded vehicles.
- .4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest. Provide Alberta Infrastructure and EHS Partnerships Ltd. with a copy of each waste manifest.
- .5 Use an approved hazardous waste company to transport and permanently dispose of mercury-containing components.

END OF SECTION