

Public Services and Procurement Canada

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY – PHASE 0 LAB MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE

Canada Centre for Inland Waters
837 Lakeshore Road
Burlington, Ontario

Revised February 28, 2018

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MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE – CANADA CENTRE FOR
INLAND WATERS. BURLINGTON, ONTARIO



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DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

Canada Centre for Inland Waters
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EXECUTIVE SUMMARY

Arcadis Canada Inc. (Arcadis) was retained by Public Services and Procurement Canada (PSPC), to conduct a designated substances and hazardous materials survey at the Canada Centre for Inland Waters (CCIW) Campus located at 837 Lakeshore Road, Burlington, Ontario.

The buildings investigated included:

- Administration and Laboratory (A&L) Building;
- Workshop and Warehouse (W&W) Building;
- Hydraulics Building;
- Wastewater Tech Centre (WTC);
- Wastewater Tech Centre Addition;
- North Annex;
- Boiler Plant;
- WTC Warehouse;
- Portable 1;
- Portable 2;
- Portable 4; and
- Portable 5.

Asbestos-containing materials found to be present in the various buildings at the CCIW Campus included:

Administration & Laboratory (A&L) Building

- thermal insulation applied to sections of pipe fittings, straights and equipment in the third floor mechanical rooms;
- thermal insulation applied to sections of pipe fittings and straights in the eighth floor mechanical room;
- thermal insulation applied to sections of pipe fittings and straights in Service Core Rooms L420, L517, LL621 and L716;
- thermal insulation applied to sections of pipe fittings in Service Core Rooms L558 and L758;
- thermal insulation applied to pipe fittings in the stairwells located on Floors 1, 3, 5 and 7;
- vinyl sheet flooring paper backing in Rooms L730, L730A and L730B;
- vinyl sheet flooring in Rooms L145 and L145A;
- drywall joint compound located at the walls adjacent to the freight elevator and service elevator on all floors;
- cement exhaust pipe in Service Core Rooms L420, L457, L517, L558, L621, L658, L716 and L755, the eighth floor mechanical room and on the roof;
- cement exhaust pipe in the ceiling spaces of various Rooms on Floors 4, 5, 6 and 7;
- cement board counter tops in various Rooms on Floors 4, 5, 6 and 7;

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- cement board applied to fume hoods and chemical storages in various Rooms on Floors 4, 5, 6 and 7;
- (12" x 12') grey vinyl floor tiles at various throughout Floors 1 to 8, including beneath carpeting;
- grey caulking applied around concrete columns, and around door frames at stairwells on Floors 1 to 8; and
- brown duct seal applied to ducts at various areas throughout the ceiling spaces of Floors 1 to 8.

Workshop & Warehouse (W&W) Building

- thermal insulation applied to sections of pipe fittings at various locations on the first and second floors;
- (12" x 12") vinyl floor tiles at various locations on the first and second floors;
- asbestos cement board in the fume hood in Room W236; and
- plaster applied to exterior soffits.

Hydraulics Building

- thermal insulation applied to pipe fittings at various locations on the first and second floors;
- thermal insulation applied to equipment in the second floor equipment room; and
- (12" x 12") vinyl floor tiles at various locations throughout the building.

Wastewater Tech Centre (WTC) Building

- thermal insulation applied to pipe fittings at various locations on the first floor;
- asbestos cement products in Rooms S104, S106, the walls between the two plant areas, and the ceiling space of the main first floor corridor, and Rooms S217/220, S221 and S224;
- asbestos countertop in Room S146;
- asbestos plaster in Room S128, and applied to exterior soffits; and
- (12" x 12") vinyl floor tiles in Rooms S214, S215 and S216.

North Annex

- (12" x 12") vinyl floor tiles in Room C114.

Boiler Plant

- thermal insulation applied to mechanical equipment in the Upper Mezzanine levels;
- thermal insulation applied to pipe fittings in the tunnel accessed from the Boiler Plant and the main floor of the Boiler Plant;
- (12" x 12") vinyl floor tiles in the Office; and
- asbestos cement board applied to the south wall above the windows in the Upper Mezzanine level.

In addition, electrical bus ducts at the campus may have asbestos-containing components.

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Lead was detected at levels above the *Surface Coating Materials Regulations* made under the *Hazardous Products Act* criterion of 90 mg/kg in sixteen of the twenty-two paint samples collected.

The yellow pipe paint in the eighth floor A&L Mechanical room and the green duct paint in the third floor R&D Mechanical Room were observed to be flaking in some locations. As the levels of lead in these paint applications is considered to be high, it is recommended that the flaking paint be removed following measures and procedures outlined in the Ministry of Labour *Guideline – Lead on Construction Projects*, April 2011. All other paint applications were observed to be in generally in good condition, with some flaking paint noted.

Fluorescent lights were observed throughout the buildings. Mercury should be assumed to be present as a gas in all fluorescent light tubes. Mercury-containing thermostats were observed at various locations in the buildings. Mercury should also be assumed to be present in paint applications, albeit at low levels.

Materials observed in the buildings which should be considered to contain silica included drywall, drywall joint compound, plaster, stucco, concrete, cement block walls, mortar, roofing materials, fireproofing, ceramic tile grout, mortar beds under ceramic tiles, ceiling tiles and cementitious pipe fitting insulation.

Arsenic may be present at low levels in paint applications.

Fluorescent lights were observed throughout the designated study areas. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed, are usually an electronic-type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling/removal of the lights.

During the course of performing the building surveys, staff of Rondar Power Services, the building maintenance company, indicated to Arcadis staff that a campus-wide ballast replacement program had occurred in the early 1990s, and all original light ballasts in the building had been removed and replaced.

Most of the transformers observed in the various buildings were of the air-cooled variety, and as such, would not contain PCBs. It was reported that transformers in the Boiler Plant are older, and as such, could contain PCBs.

Suspect Ozone-Depleting Substances (ODS) or halocarbon-containing equipment was observed at various locations in the buildings.

- In the **A&L Building**, this equipment included drinking fountains, cold drink machines (cafeteria), domestic refrigerators and freezers at various locations throughout the building, mostly in laboratories and adjacent corridors of Floors 4-7, walk-in freezers at various locations on Floors 4-7, cooling units in the Service Core Rooms on Floors 4-7, and wall-mounted air conditioning units in various laboratories on Floors 4-7.
- In the **W&W Building**, this equipment included drinking fountains, domestic refrigerators and freezers at various locations in the building, mostly in laboratories, and walk-in freezers at various locations.
- In the **Hydraulics Building**, this equipment included domestic refrigerators and freezers, a walk-in freezer and a wall-mounted air conditioning unit.

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- In the **WTC Building**, this equipment included domestic refrigerators and freezers, and wall-mounted air conditioning units.
- In the **North Annex Building**, this equipment included two domestic refrigerators in the second floor corridor.
- In **Portable 1**, this equipment included a small domestic refrigerator.
- In **Portable 2**, this equipment included several freezer units.

Diesel fuel was observed in drums in the Diesel Generator Room of the Boiler Plant. Benzene may be a component of the fuel. Benzene may also be present in small amounts in the various laboratories.

No other designated substances (vinyl chloride, acrylonitrile, isocyanates, ethylene oxide and coke oven emissions) or hazardous materials (ODS, PCBs, mould, UFFI, fuel, oil and/or waste oil storage, chemical storage; radioactive materials) would be expected to be encountered at the sites in a form that would represent an exposure concern.

Chemical products and waste chemicals were observed in various laboratories in the buildings.

During the course of our site inspections, smoke detectors that may contain radioactive materials were observed throughout both buildings. Radioactive sources are also likely present in analytical instruments such as gas chromatographs.

Standard smoke detectors do not require a radioactive license and can be disposed in a MOECC-licensed landfill.

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1 INTRODUCTION

Arcadis Canada Inc. (Arcadis) was retained by Public Services and Procurement Canada (PSPC), to conduct a designated substances and hazardous materials survey at the Canada Centre for Inland Waters (CCIW) Campus located at 837 Lakeshore Road, Burlington, Ontario.

The buildings investigated included:

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- Portable 5.

The Canadian Centre for Inland Waters (CCIW) building houses staff from Environment and Climate Change Canada (ECCC), the Department of Fisheries and Oceans (DFO), the Canadian Coast Guard (CCG) and the Royal Canadian Mounted Police (RCMP). The CCIW occupies a large waterfront site in Burlington, Ontario just inside the Hamilton Harbour, beside the Burlington Skyway bridge. The CCIW facility was constructed in approximately 1960 with various additions and renovations occurring up until 2013. The site has a total land area of 17 hectares, and a total floor area of approximately 49,000 m².

The survey was undertaken to report on the presence or suspected presence of readily observable designated substances and hazardous materials at the CCIW Campus.

1.1 Scope of Work

The scope of work for the designated substances and hazardous materials survey included the following tasks:

- Review of existing information pertaining to the subject site provided by PSPC;
- Preparation of a Health and Safety Plan;
- Site visits to verify and identify the location, quantity and condition of DSHM (including asbestos, lead, mercury, silica, PCBs, ODS, UFFI, fuel, oil and/or waste oil storage, chemical storage, radioactive materials and mould) in the subject buildings; and
- Preparation of a DSHMS report (draft and final versions).

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Arcadis also investigated potential hazards associated with laboratory decommissioning limited to the areas included in Phase 0 and Phase 1 of the Laboratory Modernization Program.

Sampling at the CCIW site to conduct the designated substances and hazardous materials survey took place from August – December 2017, and January and February 2018 by Mr. Paul Smith and/or Mr. Dwayne Kellyman of Arcadis.

2 BACKGROUND INFORMATION ON DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS

Canada Labour Code

Requirements related to disclosing the presence of hazardous substances (including designated substances) in federal government buildings are specified in Part II of the Canada Labour Code, sections 124(1)y and 125(1)Z.14, which state that employers shall:

- *“ensure that the activities of every person granted access to the work place do not endanger the health and safety of employees [Section y]; and*
- *take all reasonable care to ensure that all of the persons granted access to the workplace, other than the employer’s employees, are informed of every known or foreseeable health or safety hazard to which they are likely to be exposed in the workplace. [Section Z.14]”.*

A decision of the Ontario Superior Court of Justice confirms that when construction or redevelopment work is undertaken by a company whose primary activity is construction or redevelopment work at the site of a federally-regulated employer, the provincial health and safety laws will apply⁽¹⁾. The Ontario Occupational Health and Safety Act and regulations made thereunder would therefore apply to any construction work undertaken at the subject site.

Ontario Occupational Health and Safety Act (OHSA)

The Occupational Health and Safety Act (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)];
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)];
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]; and
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, Section 30 of the OHSA deals with the presence of designated substances on construction projects. Compliance with the OHSA and its regulations requires action to be taken where there is a designated substance hazard on a construction project.

⁽¹⁾ Gowlings OHS Law Report – December 2007.

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Section 30 of the OHS Act requires the owner of a project to determine if designated substances are present on a project and, if so, to inform all potential contractors as part of the bidding process. Contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project.

Regulation for Construction Projects, O.Reg. 213/91

The Regulation for Construction Projects, O.Reg. 213/91, applies to all construction projects. The following sections of the regulation would apply to situations where there is the potential for workers to be exposed to designated substances:

- | | | |
|------------|-----|--|
| Section 14 | (5) | A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project. |
| Section 21 | (1) | A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed. |
| | (2) | A worker's employer shall require the worker to comply with subsection (1). |
| | (3) | A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it. |
| Section 30 | | Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels. |
| Section 46 | (1) | A project shall be adequately ventilated by natural or mechanical means, if a worker may be injured by inhaling a noxious...dust or fume; |
| | (2) | If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers. |
| Section 59 | | If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment. |

Regulation for Designated Substances (O.Reg. 490/09)

The Designated Substance Regulation (O.Reg. 490/09) specifies occupational exposure limits (OELs) for designated substances and requires an assessment and a control program to ensure compliance with these OELs.

Although, O.Reg. 490/09 and the OELs do not apply to an employer on a construction project, or to their workers at the project, employers still have a responsibility to protect the health of their workers and to comply with the OHS Act and other applicable regulations. Section 25(2)(h) of the OHS Act requires that employers take "every precaution reasonable in the circumstances for the protection of a worker".

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Ontario by Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste (friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, Waste Management – General. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table C-1 in Appendix C, and specifies procedures to be followed in conducting asbestos abatement work.

O. Reg. 278/05 prescribes certain requirements for asbestos management in buildings. For on-going asbestos management in buildings, building owners are required to:

- prepare (and keep on the premises) a record (i.e., asbestos survey report) of the locations of all friable and non-friable asbestos-containing materials in a building;
- inspect asbestos-containing materials at reasonable intervals to determine their condition and update the asbestos survey record at least once in each 12-month period, and whenever asbestos-containing material is removed or discovered;
- give any person who is an occupier⁽²⁾ of the building written notice of any information in the asbestos survey record that relates to the area occupied by the person;
- give contractors written notice of the information in the asbestos survey record if the work to be carried out by the contractor may involve asbestos-containing material or may be carried out in close proximity to and may disturb asbestos-containing material;
- advise staff of the information in the asbestos survey record, if work is to be performed in a facility that contains asbestos-containing material;
- provide training for staff based on the responsibilities and duties to be undertaken in relation to asbestos management;
- clean up any fallen asbestos-containing fireproofing or acoustical or thermal insulation (if the material is being disturbed so that exposure to the material is likely to occur);

⁽²⁾ An “occupier” is defined as

- (a) a person who is in physical possession of premises, or
- (b) a person who has responsibility for and control over the condition of premises or the activities carried on there, or control over persons allowed to enter the premises.

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- repair, seal, remove or permanently enclose asbestos-containing fireproofing as thermal insulation if it is readily apparent that material will continue to fall because of deterioration; and,
- perform work operations which involve disturbance (i.e., clean-up, removal, repair, etc.) of asbestos-containing materials in accordance with the measures and procedures (Type 1, 2 and 3 operations) specified in O. Reg. 278/05.

The PSPC *Asbestos Management Directive* and *Asbestos Management Standard*, effective June 5, 2017, outlines the processes to be followed in the management of asbestos-containing materials by PSPC employees to ensure compliance with federal legislation as a minimum standard. Note that the *Asbestos Management Directive* and *Asbestos Management Standard* has recently replaced DP-057 *Asbestos Management*.

These documents enhance and supplement the *Canada Labour Code*, Part II, Occupational Health and Safety, as well as *Canada Occupational Health and Safety Regulations* Part X – Hazardous Substances, subsection 10.19 Control of Hazards. These documents also supplement the National Joint Council *Occupational Health and Safety Directive*, Part XI – Hazardous Substances, as well as PSPC *Standard on Hazardous Substances*, and *Standard on Occupational Health and Safety Training*.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* (SOR/2005-109) sets a maximum concentration of total lead of 90 mg/kg (0.009 percent or 90 parts per million) for surface coating materials, including paints, effective 21 October 2010. This criterion level applies to the sale and importation of new surface coating materials.

Information from the United States Occupational Health and Safety Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the permissible exposure limit. Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children⁽³⁾.

The National Plumbing Code allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

The Ministry of Labour Guideline, *Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne

⁽³⁾ *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry*. WorkSafe BC, 2011.

concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the Hazardous Products Act set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour Guideline, *Silica on Construction Projects*, dated April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix C, Table C-3.

2.5 Vinyl Chloride

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 Acrylonitrile

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 Other Designated Substances

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. It has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 PCBs

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by *Ontario Regulation 362, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must

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be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in specialty industrial/institutional applications prior to the 1970s including government buildings and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations* (discussed below).

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act, 1999* (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the *Canada Gazette, Part II*, and came into force on 1 January 2015. The most notable part of the amendments are the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment and Climate Change (MOECC) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOE District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOE, in accordance with O.Reg. 347, *General - Waste Management*. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs.

2.9 Ozone-Depleting Substances (ODS) and Halocarbons

In Canada, the federal, provincial and territorial governments have legislation in place for the protection of the ozone layer and management of ozone-depleting substances and their halocarbon alternatives. The use and handling of these substances are regulated by the provinces and territories in their respective jurisdictions, and through the *Federal Halocarbon Regulations, 2003* (FHR 2003) for refrigeration, air-conditioning, fire-extinguishing and solvent systems under federal jurisdiction.

The FHR 2003 were published in August 2003 and amended in July 2009 under the authority of the *Canadian Environmental Protection Act, 1999*. The purpose of the FHR 2003 is to reduce and prevent

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emissions of ozone-depleting substances and of their halocarbon alternatives to the environment from air-conditioning units, refrigeration, fire-extinguishing and solvent systems that are:

- located on federal or aboriginal lands; or
- owned by federal departments, board agencies, Crown corporations, or federal works and undertakings.

The FHR 2003 replaced the former *Federal Halocarbon Regulations* and incorporated new provisions to achieve an orderly transition from CFCs and Halons to alternative substances and technologies, reflecting *Canada's Strategy to Accelerate the Phase-Out of CFC and Halon Uses and to Dispose of the Surplus Stocks*.

Under the FHR 2003, a person who installs, services, leak tests, or charges a refrigeration system or an air conditioning system or does any other work on the system that may result in the release of a halocarbon must do so in accordance with the *Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems*.

Some of the requirements of FHR 2003 include:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ozone-depleting substances and their halocarbon alternatives;
- no person shall store, transport or purchase a halocarbon unless it is in a container designed and manufactured to be refilled and to contain that specific type of halocarbon;
- before dismantling, decommissioning or destruction of any system, a person shall recover all halocarbons contained in the system into a container designed and manufactured to be refilled and to contain that specific type of halocarbon;
- before dismantling, decommissioning or destruction or destroying a system, a person shall affix a notice to the system containing information as required in Column 3, Item 1 of Schedule 2. This information includes the name and address of the owner of the system; name of the operator of the system, specific location of the system before its dismantling, decommissioning or destruction; description of the system; name of service technician who recovered the halocarbons; certificate number of the service technician (if applicable); name of employer of service technician (if applicable); type and quantity of halocarbon and date recovered; type and charging capacity of the system; and final destination of the system; and
- in the case of dismantling, decommissioning or destruction of any system, the owner shall keep a record of the information contained in the notice as described above.

2.10 Urea Formaldehyde Foam Insulation (UFFI)

Urea formaldehyde foam insulation (UFFI) is a polymer manufactured at point-of-use by blending urea formaldehyde resin with a phosphoric acid catalyst and compressed air at a nozzle tip. This nozzle was used to inject the freshly mixed foam product into enclosed wall cavities. UFFI was introduced in Canada in the 1970s. In response to concerns about the health effects of formaldehyde gas, the installation of UFFI was banned in Canada in 1980.

2.11 Fuel, Oil and/or Waste Oil Storage

Ontario Regulation 213/01 – Fuel Oil, and *CSA Standard B139-00 – Installation Code for Oil-Burning Equipment* apply to the storage, handling, transportation and transfer of fuel oil.

2.12 Potential Hazards Associated with Laboratory Decommissioning

Decommissioning of laboratory spaces can involve a number of potential hazards including perchlorate residues in fume hoods and exhaust duct systems, azide salts in plumbing drain systems and mercury in drains, traps, cracks and crevices.

If perchloric acid or perchlorates are used in a mechanical system that does not have internal wash-down capabilities, the deposits can build-up over time in the fume hood, baffles, filters, fan units and exhaust ducts. If precautions are not implemented during maintenance or construction related work, demolition or shock to surfaces where perchlorate deposits are present could result in an explosion.

Azide salts, which can build up in metal drain systems, are unstable and decompose explosively. Shock and heat can also cause explosions.

Mercury is commonly present in laboratories. Due to its high level of toxicity and volatility under some conditions, its presence as a contaminant can result in persistent hazardous exposures. Mercury can be present in drain lines (and /or traps) from sinks, fume hoods, etc.

In general, chemical products must be identified and collected for disposal following appropriate health and safety procedures prior to demolition of a building or part thereof. All materials classified as hazardous waste in the Environmental Protection Act and O.Reg. 347 – *General – Waste Management* must be properly classified, registered as hazardous waste and disposed of at a facility licensed to accept such waste. All solid hazardous wastes must also be tested for leachate toxicity.

2.13 Radioactive Materials

Aside from nuclear and biomedical industries, radioactive materials may be present in very small amounts within glow-in-the-dark compasses and watch faces, gas lamp mantles and in smoke detectors. Smoke detectors typically contain 1 microcurie of Americium-241. Standard smoke detectors do not require a radioactive license and can be disposed in a MOECC licensed landfill.

2.14 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the Ontario Occupational Health and Safety Act, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

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- *Mould Guidelines for the Canadian Construction Industry.* Standard Construction Document CCA 82 2004. Canadian Construction Association.
- *Mould Abatement Guidelines.* Environmental Abatement Council of Ontario. Edition 3. 2015.

3 METHODOLOGY

3.1 Asbestos

Bulk sampling was performed in accordance with the requirements of O. Reg. 278/05 as follows:

- the minimum number of bulk samples to be collected from an area of homogeneous material is set out in Table 1 of the regulation (Table 1 is reproduced below).
- if analysis establishes that a bulk material sample contains 0.5 per cent or more asbestos by dry weight:
 - (a) it is not necessary to analyze other bulk material samples taken from the same area of homogeneous material; and
 - (b) the entire area of homogeneous material from which the bulk materials sample was taken is deemed to be asbestos-containing material.

Table 1
Bulk Material Samples
(From O.Reg., 278/05)

Item	Type of Material	Size of Area of Homogeneous Material	Minimum Number of Bulk Material Samples to be Collected
1	Surfacing material, including without limitation material that is applied to surfaces by spraying, by trowelling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2	Thermal insulation, except as described in Item 3	Any size	3
3	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4	Other material	Any size	3

In practice, application of the Table 1 requirements means that the specified minimum number of negative (i.e., less than 0.5% asbestos) bulk sample analysis results will be required in order to classify a material as non asbestos. Area of homogeneous material means an area in a building constructed at the same time. Homogeneous material is defined as material that is uniform in colour and texture.

Bulk sampling was “non-destructive”, therefore certain materials including but not limited to roofing materials, caulking, brick and block mortar, ceramic tile grout and mastics, were only sampled from areas of existing damage, if any.

Analysis of bulk samples was performed following EPA Method 600/R-93/116 in conformity with the requirements specified in O. Reg. 278/05. Bulk samples were analyzed by Polarized Light Microscopy (PLM). PLM with dispersion staining uses the optical properties of the fibres and their morphology to establish the type of asbestos present in the sample. The analyst uses a technique known as visual estimation to quantify the asbestos content to a reasonable degree of precision. Transmission Electron Microscopy (TEM) analysis was also performed on some non-friable materials. TEM uses a higher magnification (up to 20,000x) to detect fibres that are too short or thin to be reliably detected by PLM at a magnification of 100x. Fibre type is determined by Energy-Dispersive X-ray (EDXA) analysis of the sample.

If analysis establishes that a bulk material sample contains 0.5 per cent or more asbestos by dry weight, it is not necessary to analyze other bulk material samples taken from the same area of homogeneous material. This is referred to as a “positive stop” analysis.

3.2 Lead

Samples of select, representative paint applications collected during the course of the site inspection were forwarded to the Maxxam Analytics laboratory in Mississauga, Ontario for analysis of lead content.

3.3 Mercury

The presence of equipment which may contain mercury, such as fluorescent light tubes, thermometers, gauges, etc. observed during the course of our site inspection was recorded.

3.4 Silica

The presence of silica-containing materials observed during the course of our site inspection was documented. Silica is known to be a constituent of brick, concrete, cement, etc. Sampling and laboratory analysis are not required to make this determination.

3.5 PCBs

Fluorescent lights were inspected during the course of our survey to determine whether they were the T12 type, and may therefore contain PCB ballasts.

Transformers were investigated to determine whether they were the “dry” type which do not contain PCB dielectric fluids, or the “wet” type which can contain PCBs.

3.6 Ozone-Depleting Substances (ODS) and Halocarbons

Information on air-conditioning equipment, cooling equipment (refrigerators, etc.), was recorded, where available, during the site inspection by Arcadis staff.

3.7 Urea Formaldehyde Foam Insulation

Investigations for the potential presence of UFFI entailed inspection of exterior and interior openings (i.e., “nozzle holes”) made for installation of insulation and limited visual observation of the wall cavity and insulating materials at select, representative locations.

3.8 Fuel, Oil and Waste Oil Storage

The presence of any fuel, oil and stored waste oil was noted during the course of our site inspections.

3.9 Potential Hazards Associated with Laboratory Decommissioning

Surface wipe sampling of interior surfaces of fume hoods, exhaust ducts and fan units associated with laboratory fume hoods located in the areas included in the Phase 0 and 1 laboratory modernization project was conducted as described in the report provided in Appendix E.

The presence of any chemical products and waste chemicals observed during the course of our site inspection was recorded.

3.10 Radioactive Materials

The presence of equipment which may contain radioactive materials, such as smoke detectors, observed during the course of our site inspection was recorded.

3.11 Mould

The presence of “suspect” mould observed during the course of our site inspection was documented. “Suspect” mould is typically a coloured, textured substance or discolouration or staining on a building material surface which, based on our experience, may be mould growth. The adjective “suspect” is used where the presence of mould has not been confirmed by laboratory analysis.

The inspection of mould was limited to visual observations of readily-accessible surfaces and did not include intrusive inspections of wall cavities.

At the request of the client, one bulk sample of suspect mould-impacted (2' x 4') ceiling tile was collected from Room W249 of the Workshop and Warehouse Building and submitted for analysis for mould. The sample was submitted to the Sporometrics Inc. laboratory for microscopic analysis. Sporometrics is accredited by the ISO/IEC 17025:2005 standard by the Environmental Microbiology Program of the American Hygiene Association Laboratory Accreditation Program.

4 OBSERVATIONS AND RESULTS

4.1 Asbestos

Arcadis reviewed the Pinchin report entitled “*Asbestos Assessment – Canada Centre for Inland Waters – 867 Lakeshore Road, Burlington, Ontario*”, dated July 12, 2013, and the Arcadis report entitled “*Designated Substances and Hazardous Materials Survey – Canada Centre for Inland Waters Fit Up Project – 867 Lakeshore Road, Burlington, Ontario*”, dated February 18, 2016. Bulk sample analyses results obtained from these reports were utilized by Arcadis during the course of our investigation and in the preparation of this report.

Bulk sample analyses results obtained from these reports were utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our designated substances and hazardous materials survey, additional representative bulk samples of materials were collected by Arcadis staff in accordance with the requirements of Table 1 of O. Reg. 278/05. The samples were forwarded to EMSL Canada Inc. for asbestos analyses. EMSL holds a current Certificate of Accreditation for Bulk Asbestos Fibre Analysis under the National Voluntary Laboratory Accreditation Program (NVLAP). The sample locations are shown on the floor plans provided in Appendix A.

Additional materials, such as roofing materials, duct seal, mortar and caulking were collected from Floors 4-7, as well as the Third and Eighth Floor Mechanical Rooms, as these areas will reportedly be affected by the Lab Modernization Project.

Materials which were in good condition and which would have sustained some limited damage by the act of sample collection, and were not sampled in the remaining areas included mortar, window caulking and ceramic tile grout, and possibly may have compromised the building envelope, in the case of caulking and roofing samples. These materials should be tested for asbestos prior to any disturbance (at the time of maintenance, construction or demolition work, for example) in accordance with applicable regulatory requirements.

The results of the bulk sample analyses for asbestos content are provided in Table 4.1, and the laboratory report is provided in Appendix B. The locations of the asbestos-containing materials and the sample locations are shown on the floor plans provided in Appendix A. Photographs are provided in Appendix D.

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Table 4.1
Summary of Results of Analyses of Bulk Samples for Asbestos Content
August, September, October and November 2017; January and February 2018

Sample No.	Location	Description	Asbestos Content
A&L Building			
A-1	South side of eighth floor roof	roofing materials-1	None detected None detected (TEM)
A-2	Central portion of eight floor roof	shingle-2	None detected
A-2	Central portion of eighth floor roof	insulation-2	None detected
A-2	Central portion of eighth floor roof	foam-2	None detected
A-3	North side of eighth floor roof	shingle-3	None detected
A-3	North side of eighth floor roof	tar-3	None detected
A-3	North side of eighth floor roof	insulation-3	None detected
A-3	North side of eighth floor roof	foam-3	None detected
A-4	Third floor mechanical room	(12" x 12") white vinyl floor tile-vinyl portion	None detected None detected (TEM)
A-4	Third floor mechanical room	(12" x 12") white vinyl floor tile-mastic	None detected
A-16	Room L454	(12" x 12") white vinyl floor tile-vinyl portion	None detected
A-16	Room L454	(12" x 12") white vinyl floor tile-mastic	None detected
A-36	Room L662	(12" x 12") white vinyl floor tile-vinyl portion	None detected
A-36	Room L662	(12" x 12") white vinyl floor tile-mastic	None detected
A-11	Corridor at Room L460	(12" x 12") grey vinyl floor tile-vinyl portion	6.3% chrysotile
A-11	Corridor at Room L460	(12" x 12") grey vinyl floor tile-mastic	None detected
A-15	Room L401	green vinyl sheet flooring-levelling compound	0.29% chrysotile ⁽¹⁾ 0.73% chrysotile (TEM)
A-56	Room L730	paper backing under diamond pattern vinyl sheet flooring	45% chrysotile
A-18	Room L414	vinyl sheet flooring and backing-1	None detected None detected (TEM)
A-31	Room L525	vinyl sheet flooring-2	None detected
A-31	Room L525	vinyl sheet flooring backing-2	None detected
A-32	Room L525	vinyl sheet flooring-3	None detected
A-32	Room L525	vinyl sheet flooring backing-3	None detected
A-33	Room L533	vinyl sheet flooring-1	None detected None detected (TEM)

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Sample No.	Location	Description	Asbestos Content
A-33	Room L533	vinyl sheet flooring backing-1	None detected
A-34	Room L533	vinyl sheet flooring and backing-2	None detected
A-35	Room L533	vinyl sheet flooring and backing-1	None detected
A-6	Third floor A&L mechanical room	hanger insulation	50% chrysotile
A-25	Room L517	condensate pipe straight insulation	40% chrysotile
A-17	Room L446	cement board in fume hood storage	30% chrysotile
A-39	Room L668	black countertop-1	9.1% chrysotile
A-46	Room L504	vinyl baseboard mastic-1	None detected
A-47	Room L472	vinyl baseboard mastic-2	None detected
A-48	Corridor at Room L452B	vinyl baseboard mastic-3	None detected
A-27	Room L525	(2' x 4') ceiling tile-1	None detected
A-28	Room L525	(2' x 4') ceiling tile-1	None detected
A-29	Room L525	(2' x 4') ceiling tile-1	None detected
A-44	Corridor at NW6 Stairwell	typical (2' x 4') ceiling tile-1	None detected
A-41	Room L625	white sink coating-1	None detected
A-42	Room L646	white sink coating-2	None detected
A-45	Room L572	white sink coating-3	None detected
A-13	Room L436	masonry mortar-1	None detected
A-23	Room L556	masonry mortar-2	None detected
A-40	Room L636	masonry mortar-3	None detected
A-7	Room L420	grey column caulking-1	2% chrysotile
A-8	Room L420	grey glass caulking-1	None detected
A-19	Room L558	grey glass caulking-2	None detected
A-64	Room L457	grey glass caulking-3	None detected
A-9	Room L420	grey pipe caulking-1	None detected
A-21	Room L558	grey pipe caulking-2	None detected
A-51	Room L755	grey pipe caulking-3	None detected
A-22	Room L558	cement exhaust pipe	25% chrysotile 5% crocidolite
A-12	Corridor at 4 th Floor freight elevator	drywall joint compound	0.50% chrysotile
A-57	Room L730	drywall joint compound	None detected
A-49	Room L755	grey duct seal-1	None detected
A-59	Room L621	grey duct seal-2	None detected
A-60	Room L420	grey duct seal-3	None detected
A-52	Corridor at Room L759A	brown duct seal-1	None detected
A-58	Corridor at Room L635A	brown duct seal-2	2% chrysotile
A-5	Third floor mechanical room (Rondar office)	rough wall plaster-skim coat-1	None detected
A-5	Third floor mechanical room (Rondar office)	rough wall plaster-rough coat-1	None detected
A-14	Room L438	smooth ceiling plaster-skim coat-1	None detected
A-14	Room L438	smooth ceiling plaster-rough coat-1	None detected
A-24	Room L556	smooth ceiling plaster-skim coat-2	None detected
A-24	Room L556	smooth ceiling plaster-rough coat-2	None detected

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Sample No.	Location	Description	Asbestos Content
A-43	Corridor at NW6 Stairwell	smooth wall plaster-skim coat-3	None detected
A-43	Corridor at NW6 Stairwell	smooth wall plaster-rough coat-3	None detected
A-53	Room L756	smooth ceiling plaster-skim coat-4	None detected
A-65	Corridor at L146	(12" x 12") vinyl floor tile	None detected None detected (TEM)
A-66	Room L150	(12" x 12") vinyl floor tile	None detected
A-67	Room L145A	textured ceiling tile	None detected
A-68	Room L145	texture coat on ceiling tile	None detected
A-69	Room L112	paring on wall-1	None detected
A-70	Room L112	paring on wall-2	None detected
A-71	Room L112	paring on wall-3	None detected
A-78	Mall area	ceiling texture coat-1	None detected
A-79	Mall area	ceiling texture coat-2	None detected
A-80	Mall area	ceiling texture coat-3	None detected
A-81	Mall area	ceiling texture coat-4	None detected
A-82	Mall area	ceiling texture coat-5	None detected
A-83	Mall area	ceiling texture coat-6	None detected
A-84	Mall area	ceiling texture coat-7	None detected
A-102-DW-1	Room L102 (Auditorium)	drywall	None detected
A-102-DW-2	Room L102 (Auditorium)	drywall	None detected
A-102-DW-3	Room L102 (Auditorium)	drywall	None detected
A-102-JC-1	Room L102 (Auditorium)	drywall joint compound	None detected
A-231A-JC-1	Room L231A	drywall joint compound	None detected
W&W Building			
A-72	Room W107	drywall joint compound	None detected
A-73	Room W224B	(2' x 4') ceiling tile	None detected
A-74	Room W220	smooth plaster	None detected
A-75	Corridor at Room W238	fireproofing	None detected

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Sample No.	Location	Description	Asbestos Content
A-76	Room W249	drywall joint compound	None detected
A-77	Corridor at W251	(12" x 12") vinyl floor tile	None detected
A-W249-1	Room W249	beige floor coating	None detected
A-W249-2	Room W249	beige floor coating	None detected
A-W249-3	Room W249	beige floor coating	None detected
A-W248-4	Room W248	brown floor coating	None detected
A-W249-5	Room W249	brown floor coating	None detected
A-W247-6	Room W247	brown floor coating	None detected
A-W248-TP-1	Room W248	textured wall paint	None detected
A-W247-TP-1	Room W247	textured wall paint	None detected
A-W246B-TP-1	Room W246B	textured wall paint	None detected
A-W248-PL-1	Room W248	ceiling plaster	None detected
A-W246B-PL-2	Room W246B	ceiling plaster	None detected
A-W248-PL-3	Room W248	ceiling plaster	None detected
Boiler Plant			
A-77A	Room 227	drywall joint compound	None detected
A-78A	Boiler Plant	(12" x 12") vinyl floor tile-grey with grey flecks-1	None detected None detected (TEM)
A-79A	Boiler Plant	(12" x 12") vinyl floor tile-grey with grey flecks-1	None detected
A-80A	Boiler Plant	(12" x 12") vinyl floor tile-grey with grey flecks-1	None detected
WTC Building			
A-81A	Second floor corridor	(2' x 4') ceiling tile-chicken feet	None detected

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Sample No.	Location	Description	Asbestos Content
A-82A	Room S202	plaster (top and scratch coat) – finish coat	None detected
A-82A	Room S202	plaster (top and scratch coat) – rough coat	None detected
A-83A	Room S202	plaster (top and scratch coat) – finish coat	None detected
A-83A	Room S202	plaster (top and scratch coat) – rough coat	None detected
A-85	Room S223	drywall joint compound	None detected
A-86	Room S221	fireproofing	None detected
A-87	Room S221	(2' x 4') ceiling tile	None detected
A-88	Second floor corridor	vinyl sheet flooring-1	None detected None detected (TEM)
A-92	Room S111	vinyl sheet flooring-2	None detected
A-94	Second floor corridor	vinyl sheet flooring-3	None detected
A-90	Room S211	white sink coating-1	None detected
A-91	Room S211	white sink coating-2	None detected
A-93	Room S211	white sink coating-3	None detected
A-107	Room S130	fireproofing-1	None detected
A-108	Room S131	fireproofing-2	None detected
A-109	Room S134	fireproofing-3	None detected
A-110	Room S142	(12" x 12") vinyl floor tile-1	None detected None detected (TEM)
A-111	Room S142	(12" x 12") vinyl floor tile-2	None detected
A-112	Room S142	(12" x 12") vinyl floor tile-3	None detected
A-113	Room S142	(2' x 4') ceiling tile-1	None detected
A-114	Room S114	(2' x 4') ceiling tile-2	None detected
A-116	Room S223	(2' x 4') ceiling tile-3	None detected
A-115	Room S142	drywall joint compound	None detected
1A	Northeast Roof	roofing material – shingle	None detected
1A	Northeast Roof	roofing material – fibreboard	None detected
1A	Northeast Roof	roofing material – iso	None detected
1A	Northeast Roof	roofing material – tar felt	None detected
1A	Northeast Roof	roofing material – concrete	None detected

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Sample No.	Location	Description	Asbestos Content
1B	Northeast Roof	roofing material – shingle	None detected
1B	Northeast Roof	roofing material – tar	None detected
1B	Northeast Roof	roofing material – fibreboard	None detected
1B	Northeast Roof	roofing material – iso	None detected
1C	Northeast Roof	roofing material – shingle	None detected
1C	Northeast Roof	roofing material – tar	None detected
1C	Northeast Roof	roofing material – felt	None detected
1C	Northeast Roof	roofing material – iso	None detected
1C	Northeast Roof	roofing material – fibreboard	None detected
2A	Northwest Roof	roofing material – shingle	None detected
2A	Northwest Roof	roofing material – cover board	None detected
2A	Northwest Roof	roofing material – iso	None detected
2A	Northwest Roof	roofing material – tar felt	None detected
2A	Northwest Roof	roofing material – tar	None detected
2B	Northwest Roof	roofing material – shingle	None detected
2B	Northwest Roof	roofing material – tar felt	None detected
2B	Northwest Roof	roofing material – cover board	None detected
2B	Northwest Roof	roofing material – iso	None detected
2C	Northwest Roof	roofing material – shingle	None detected
2C	Northwest Roof	roofing material – tar felt	None detected
2C	Northwest Roof	roofing material – tar	None detected
2C	Northwest Roof	roofing material – cover board	None detected
2C	Northwest Roof	roofing material – iso	None detected
3A	Roof	tar on metal exhaust duct	None detected
3B	Roof	tar on metal exhaust duct	None detected
3C	Roof	tar on metal exhaust duct	None detected
4A	Metal flashing	black caulking	None detected
4B	Metal flashing	black caulking	None detected
4C	Metal flashing	black caulking	None detected
5A	Chemical exhaust	white caulking	None detected
5B	Chemical exhaust	white caulking	None detected
5C	Chemical exhaust	white caulking	None detected

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Sample No.	Location	Description	Asbestos Content
0001A	Treatment Room	transite panel	10-25% chrysotile
North Annex			
A-95	First Floor Corridor	drywall joint compound	None detected
A-96	First Floor Corridor	(12" x 12") vinyl floor tile	None detected
A-100	Room C114	(12" x 12") vinyl floor tile	None detected
A-97	Second Floor Corridor	(2' x 4') ceiling tile	None detected
A-98	Room C211	(2' x 4') ceiling tile	None detected
A-99	Room C104	(2' x 4') ceiling tile	None detected
Portable 1			
A-122	interior	vinyl sheet flooring	None detected None detected (TEM)
A-123	interior	vinyl sheet flooring	None detected
A-124	interior	vinyl sheet flooring	None detected
Portable 2			
A-128	interior	(2' x 4') ceiling tile – pinhole with random fissures	None detected
A-129	interior	(2' x 4') ceiling tile – pinhole with random fissures	None detected
A-130	interior	(2' x 4') ceiling tile – pinhole with random fissures	None detected
A-119	exterior	paring on siding	None detected
A-120	exterior	paring on siding	None detected
A-121	exterior	paring on siding	None detected
A-131	interior	(12" x 12") vinyl floor tile – blue	None detected None detected (TEM)
A-132	interior	(12" x 12") vinyl floor tile – blue	None detected
A-133	interior	(12" x 12") vinyl floor tile – blue	None detected
Portable 4			
A-125	interior	(2' x 4') ceiling tile – fissures on 2'	None detected
A-126	interior	(2' x 4') ceiling tile – fissures on 2'	None detected
A-127	interior	(2' x 4') ceiling tile – fissures on 2'	None detected
Portable 5			
A-116	interior	vinyl sheet flooring – grey with white specks	None detected

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Sample No.	Location	Description	Asbestos Content
			None detected (TEM)
A-117	interior	vinyl sheet flooring – grey with white specks	None detected
A-118	interior	vinyl sheet flooring – grey with white specks	None detected
Pinchin Sample Results			
0001A	WTC Building	transite material	
0001A	Tunnel from Boiler Plant	parging cement on condensate line	10% chrysotile ⁽¹⁾
0002A	Tunnel from Boiler Plant	parging cement on steam line	10% chrysotile ⁽¹⁾
0003A	Upper Mechanical Room, Location 1	parging cement on high pressure steam line	None detected ⁽¹⁾
0003B	Upper Mechanical Room, Location 1	parging cement on high pressure steam line	None detected ⁽¹⁾
0003C	Upper Mechanical Room, Location 1	parging cement on high pressure steam line	None detected ⁽¹⁾
0004A	Upper Mechanical Room, Location 1	parging cement on top of recycled water tank	None detected ⁽¹⁾
0004B	Upper Mechanical Room, Location 1	parging cement on top of recycled water tank	None detected ⁽¹⁾
0004C	Upper Mechanical Room, Location 1	parging cement on top of recycled water tank	None detected ⁽¹⁾
0005A-A	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – vinyl portion	None detected ⁽¹⁾
0005A-B	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – mastic portion	None detected ⁽¹⁾
0005B-A	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – vinyl portion	None detected ⁽¹⁾
0005B-B	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – mastic portion	None detected ⁽¹⁾
0005C-A	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – vinyl portion	None detected ⁽¹⁾
0005C-B	Control Room, Location 5	(12" x 12") vinyl floor tile-white with grey streaks – mastic portion	None detected ⁽¹⁾
0006A-A	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – vinyl portion	None detected ⁽¹⁾
0006A-B	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – mastic portion	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0006B-A	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – vinyl portion	None detected ⁽¹⁾
0006B-B	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – mastic portion	None detected ⁽¹⁾
0006C-A	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – vinyl portion	None detected ⁽¹⁾
0006CA-B	Washroom under stairs	(12" x 12") vinyl floor tile-grey with black and grey flecks – mastic portion	None detected ⁽¹⁾
0007A	Control Room Corridor, Location 5	drywall joint compound	None detected ⁽¹⁾
0007B	Control Room Corridor, Location 5	drywall joint compound	None detected ⁽¹⁾
0007C	Control Room Corridor, Location 5	drywall joint compound	None detected ⁽¹⁾
0008A	Switch Gear Room	drywall joint compound	3% chrysotile ⁽¹⁾
0009A-A	Mezzanine Office, Location 8	(12" x 12") vinyl floor tile-grey with black streaks – vinyl portion	4% chrysotile ⁽¹⁾
0009A-B	Mezzanine Office, Location 8	(12" x 12") vinyl floor tile-grey with black streaks – mastic portion	None detected ⁽¹⁾
0009B-B	Mezzanine Office, Location 8	(12" x 12") vinyl floor tile-grey with black streaks – mastic portion	None detected ⁽¹⁾
0009C-B	Mezzanine Office, Location 8	(12" x 12") vinyl floor tile-grey with black streaks – mastic portion	None detected ⁽¹⁾
0010A	Mezzanine offices and Washroom	textured ceiling plaster	None detected ⁽¹⁾
0010B	Mezzanine offices and Washroom	textured ceiling plaster	None detected ⁽¹⁾
0010C	Mezzanine offices and Washroom	textured ceiling plaster	None detected ⁽¹⁾
0011A	Diesel Generator Room	paring cement on domestic cold water line	10% chrysotile ⁽¹⁾
0012A-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – felt layer	None detected ⁽¹⁾
0012A-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – paper layer	None detected ⁽¹⁾
0012B-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – felt layer	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0012B-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – paper layer	None detected ⁽¹⁾
0012C-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – felt layer	None detected ⁽¹⁾
0012C-A	Upper Mechanical Room, Location 3	sweat-wrap pipe insulation on storm sewer line – paper layer	None detected ⁽¹⁾
0013A	Storage Room, Location 24	tar on fibreglass insulation	None detected ⁽¹⁾
0013B	Storage Room, Location 24	tar on fibreglass insulation	None detected ⁽¹⁾
0013C	Storage Room, Location 24	tar on fibreglass insulation	None detected ⁽¹⁾
0014A	Equipment Room, Location 34	parping cement at joints of fibreglass on ducts	10% chrysotile ⁽¹⁾
0015A-A	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – vinyl portion	None detected ⁽¹⁾
0015A-B	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – mastic portion	None detected ⁽¹⁾
0015B-A	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – vinyl portion	None detected ⁽¹⁾
0015B-B	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – mastic portion	None detected ⁽¹⁾
0015C-A	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – vinyl portion	None detected ⁽¹⁾
0015C-B	Catwalk in Hydraulics Lab	(12" x 12") vinyl floor tile-white with grey splotches – mastic portion	None detected ⁽¹⁾
0016A-A	Office H118A	smooth exterior wall plaster – finish coat	None detected ⁽¹⁾
0016A-B	Office H118A	smooth exterior wall plaster – base coat	None detected ⁽¹⁾
0016B-A	Office H112	smooth exterior wall plaster – finish coat	None detected ⁽¹⁾
0016B-B	Office H112	smooth exterior wall plaster – base coat	None detected ⁽¹⁾
0016C-A	Office H108	smooth exterior wall plaster – finish coat	None detected ⁽¹⁾
0016C-B	Office H108	smooth exterior wall plaster – base coat	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0016D-A	Office H201	smooth exterior wall plaster – finish coat	None detected ⁽¹⁾
0016D-B	Office H201	smooth exterior wall plaster – base coat	None detected ⁽¹⁾
0016E-A	Second floor Janitor's closet	smooth exterior wall plaster – finish coat	None detected ⁽¹⁾
0016E-B	Second floor Janitor's closet	smooth exterior wall plaster – base coat	None detected ⁽¹⁾
0017A	Women's Washroom, Location 64	drywall joint compound	None detected ⁽¹⁾
0017B	Women's Washroom, Location 64	drywall joint compound	None detected ⁽¹⁾
0017C	Women's Washroom, Location 97	drywall joint compound	None detected ⁽¹⁾
0018A	Room W101	(2' x 4') ceiling tile-pinhole and textured	None detected ⁽¹⁾
0018B	Room W101	(2' x 4') ceiling tile-pinhole and textured	None detected ⁽¹⁾
0018C	Room W101	(2' x 4') ceiling tile-pinhole and textured	None detected ⁽¹⁾
0019A	Room W106	sprayed fireproofing	None detected ⁽¹⁾
0019B	Corridor, Location 113	sprayed fireproofing	None detected ⁽¹⁾
0019C	Corridor, Location 113	sprayed fireproofing	None detected ⁽¹⁾
0019D	Workshop	sprayed fireproofing	None detected ⁽¹⁾
0019E	Larger warehouse	sprayed fireproofing	None detected ⁽¹⁾
0019F	Larger warehouse	sprayed fireproofing	None detected ⁽¹⁾
0019G	Larger warehouse	sprayed fireproofing	None detected ⁽¹⁾
0020A	Staging Area 1, Location 116	drywall joint compound	None detected ⁽¹⁾
0020B	Stairwell, Location 120	drywall joint compound	None detected ⁽¹⁾
0020C	Warehouse, Location 133	drywall joint compound	None detected ⁽¹⁾
0021A-A	Room W116	smooth plaster – finish coat	None detected ⁽¹⁾
0021A-B	Room W116	smooth plaster – base coat	None detected ⁽¹⁾
0021B-A	Room W116	smooth plaster – finish coat	None detected ⁽¹⁾
0021B-B	Room W116	smooth plaster – base coat	None detected ⁽¹⁾
0021C-A	Room W116	smooth plaster – finish coat	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0021C-B	Room W116	smooth plaster – base coat	None detected ⁽¹⁾
0022A	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022B	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022C	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022D	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022E	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022F	Warehouse, west wall	rough plaster	None detected ⁽¹⁾
0022G	Warehouse, pipe chase on second floor	rough plaster	None detected ⁽¹⁾
0023A-A	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – vinyl portion	None detected ⁽¹⁾
0023A-B	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – mastic portion	None detected ⁽¹⁾
0023B-A	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – vinyl portion	None detected ⁽¹⁾
0023B-B	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – mastic portion	None detected ⁽¹⁾
0023C-A	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – vinyl portion	None detected ⁽¹⁾
0023C-B	Room W114	(12" x 12") vinyl floor tile-blue with white flecks – mastic portion	None detected ⁽¹⁾
0024A	Warehouse	parging cement on pipe fitting	10% chrysotile ⁽¹⁾
0025A	Machine Shop area, bulkhead	rough plaster	None detected ⁽¹⁾
0025B	Machine Shop area, bulkhead	rough plaster	None detected ⁽¹⁾
0025C	Machine Shop area, bulkhead	rough plaster	None detected ⁽¹⁾
0026A-A	Corridor at Room W112	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0026A-B	Corridor at Room W112	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0026B-A	Corridor at Room W112	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0026B-B	Corridor at Room W112	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0026C-A	Corridor at Room W112	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0026C-B	Corridor at Room W112	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0026D-A	Room W208	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0026D-B	Room W208	smooth ceiling plaster – base coat	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0026E-A	Room W208	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0026E-B	Room W208	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0027A	Room W232	drywall joint compound	None detected ⁽¹⁾
0027B	Room W232	drywall joint compound	None detected ⁽¹⁾
0027C	Room W232	drywall joint compound	None detected ⁽¹⁾
0028A	W2 Corridor	red duct mastic	None detected ⁽¹⁾
0028B	W2 Corridor	red duct mastic	None detected ⁽¹⁾
0028C	W2 Corridor	red duct mastic	None detected ⁽¹⁾
0029A	Room W247	smooth ceiling plaster	None detected ⁽¹⁾
0029B	Room W247	smooth ceiling plaster	None detected ⁽¹⁾
0029C	Room W247	smooth ceiling plaster	None detected ⁽¹⁾
0030A-A	Room W214B	smooth plaster on exterior wall – finish coat	None detected ⁽¹⁾
0030A-B	Room W214B	smooth plaster on exterior wall – base coat	None detected ⁽¹⁾
0030B-A	Room W214B	smooth plaster on exterior wall – finish coat	None detected ⁽¹⁾
0030B-B	Room W214B	smooth plaster on exterior wall – base coat	None detected ⁽¹⁾
0030C-A	Room W214	smooth plaster on exterior wall – finish coat	None detected ⁽¹⁾
0030C-B	Room W214	smooth plaster on exterior wall – base coat	None detected ⁽¹⁾
0030D-A	Room R259	smooth plaster on concrete block wall – finish coat	None detected ⁽¹⁾
0030D-B	Room R259	smooth plaster on concrete block wall – base coat	None detected ⁽¹⁾
0030E-A	Room R256	smooth plaster on concrete block wall – finish coat	None detected ⁽¹⁾
0030E-B	Room R256	smooth plaster on concrete block wall – base coat	None detected ⁽¹⁾
0030F-A	Room L134	smooth plaster on wall – finish coat	None detected ⁽¹⁾
0030F-B	Room L134	smooth plaster on wall – base coat	None detected ⁽¹⁾
0030G-A	Corridor near Auditorium	smooth plaster on wall – finish coat	None detected ⁽¹⁾
0030G-B	Corridor near Auditorium	smooth plaster on wall – base coat	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0031A-A	Room R262	sweat-wrap pipe insulation on rainwater leader – paper layer	None detected ⁽¹⁾
0031A-B	Room R262	sweat-wrap pipe insulation on rainwater leader – felt layer	None detected ⁽¹⁾
0031B-A	Room R262	sweat-wrap pipe insulation on rainwater leader – paper layer	None detected ⁽¹⁾
0031B-B	Room R262	sweat-wrap pipe insulation on rainwater leader – felt layer	None detected ⁽¹⁾
0031C-A	Room R262	sweat-wrap pipe insulation on rainwater leader – paper layer	None detected ⁽¹⁾
0031C-B	Room R262	sweat-wrap pipe insulation on rainwater leader – felt layer	None detected ⁽¹⁾
0032A-A	Room R234B	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0032A-B	Room R234B	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0032A-A	Room R234B	smooth ceiling plaster – finish coat	None detected ⁽¹⁾
0032A-B	Room R234B	smooth ceiling plaster – base coat	None detected ⁽¹⁾
0033A	Room R128	drywall joint compound	None detected ⁽¹⁾
0033B	Room R128	drywall joint compound	None detected ⁽¹⁾
0033C	Wildlife Enforcement Offices	drywall joint compound	None detected ⁽¹⁾
0034A-A	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – vinyl portion	None detected ⁽¹⁾
0034A-B	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – mastic portion	None detected ⁽¹⁾
0034B-A	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – vinyl portion	None detected ⁽¹⁾
0034B-B	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – mastic portion	None detected ⁽¹⁾
0034C-A	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – vinyl portion	None detected ⁽¹⁾
0034C-B	Room R102	(12" x 12") vinyl floor tile-white with blue flecks – mastic portion	None detected ⁽¹⁾
0035A-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾
0035A-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0035B-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0035B-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0035C-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾
0035C-A	Corridor near L146	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0036A-A	Room L148	smooth wall plaster – finish coat	None detected ⁽¹⁾
0036A-B	Room L148	smooth wall plaster – base coat	None detected ⁽¹⁾
0036B-A	Room L148	smooth wall plaster – finish coat	None detected ⁽¹⁾
0036B-B	Room L148	smooth wall plaster – base coat	None detected ⁽¹⁾
0036C-A	Kitchen	smooth wall plaster – finish coat	None detected ⁽¹⁾
0036C-B	Kitchen	smooth wall plaster – base coat	None detected ⁽¹⁾
0037A	Kitchen	drywall joint compound	None detected ⁽¹⁾
0037B	Kitchen	drywall joint compound	None detected ⁽¹⁾
0037C	Kitchen	drywall joint compound	None detected ⁽¹⁾
0038A	Cafeteria seating area	texture finish on gypsum board ceiling tile	None detected ⁽¹⁾
0038B	Cafeteria seating area	texture finish on gypsum board ceiling tile	None detected ⁽¹⁾
0038C	Cafeteria seating area	texture finish on gypsum board ceiling tile	None detected ⁽¹⁾
0039A-A	Cafeteria seating area	red vinyl sheet flooring – vinyl portion	3% chrysotile ⁽¹⁾
0039A-B	Cafeteria seating area	red vinyl sheet flooring – mastic portion	None detected ⁽¹⁾
0039B-B	Cafeteria seating area	red vinyl sheet flooring – mastic portion	None detected ⁽¹⁾
0039C-B	Cafeteria seating area	red vinyl sheet flooring – mastic portion	None detected ⁽¹⁾
0040A-A	Room L223	grey vinyl sheet flooring-fleck pattern – vinyl portion	None detected ⁽¹⁾
0040A-B	Room L223	grey vinyl sheet flooring-fleck pattern – mastic portion	None detected ⁽¹⁾
0040B-A	Room L223	grey vinyl sheet flooring-fleck pattern – vinyl portion	None detected ⁽¹⁾
0040B-B	Room L223	grey vinyl sheet flooring-fleck pattern – mastic portion	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0040C-A	Room L223	grey vinyl sheet flooring-fleck pattern – vinyl portion	None detected ⁽¹⁾
0040C-B	Room L223	grey vinyl sheet flooring-fleck pattern – mastic portion	None detected ⁽¹⁾
0041A-A	Room L205B	brown vinyl sheet flooring – vinyl portion	None detected ⁽¹⁾
0041A-B	Room L205B	Brown sheet flooring – mastic portion	None detected ⁽¹⁾
0041B-A	Room L205B	brown vinyl sheet flooring – vinyl portion	None detected ⁽¹⁾
0041B-B	Room L205B	Brown sheet flooring – mastic portion	None detected ⁽¹⁾
0041C-A	Room L205B	brown vinyl sheet flooring – vinyl portion	None detected ⁽¹⁾
0041C-B	Room L205B	Brown sheet flooring – mastic portion	None detected ⁽¹⁾
0042A-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042A-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042B-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042B-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042C-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042C-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042D-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042D-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042E-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042E-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042F-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0042F-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0042G-A	Third floor mechanical room	rough wall plaster – finish coat	None detected ⁽¹⁾
0042G-B	Third floor mechanical room	rough wall plaster – base coat	None detected ⁽¹⁾
0043A	Third floor mechanical room	pre-formed block insulation on yellow steam line	10% amosite, 3% chrysotile ⁽¹⁾
0044A	R&D mechanical room	paring cement over fibreglass on green water tanks	25% chrysotile ⁽¹⁾
0045A	R&D mechanical room	paring cement at seams of fibreglass insulated ducts	25% chrysotile ⁽¹⁾
0046A	Room L307, Finances	drywall joint compound	None detected ⁽¹⁾
0046B	Room L307, Finances	drywall joint compound	None detected ⁽¹⁾
0046C	Room L307, Finances	drywall joint compound	None detected ⁽¹⁾
0047A	Room L454	drywall joint compound on west wall	3% chrysotile ⁽¹⁾
0048A-A	Room L562	(12" x 12") vinyl floor tile-black – vinyl portion	3% chrysotile ⁽¹⁾
0048A-B	Room L562	(12" x 12") vinyl floor tile-black – mastic portion	None detected ⁽¹⁾
0048B-B	Room L562	(12" x 12") vinyl floor tile-black – mastic portion	None detected ⁽¹⁾
0048C-B	Room L562	(12" x 12") vinyl floor tile-black – mastic portion	None detected ⁽¹⁾
0049A	Elevator area of third floor mechanical room	drywall joint compound	None detected ⁽¹⁾
0049B	Elevator area of third floor mechanical room	drywall joint compound	None detected ⁽¹⁾
0049C	Elevator area of third floor mechanical room	drywall joint compound	None detected ⁽¹⁾
0050A	Room H160	drywall joint compound	None detected ⁽¹⁾
0050B	Room H160	drywall joint compound	None detected ⁽¹⁾
0050C	Room H160	drywall joint compound	None detected ⁽¹⁾
0051A	Room L730	drywall joint compound	None detected ⁽¹⁾
0051B	Room L730	drywall joint compound	None detected ⁽¹⁾
0051C	Room L730	drywall joint compound	None detected ⁽¹⁾
0052A	Room L730	vinyl sheet flooring	15% chrysotile ⁽¹⁾

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY – PHASE 0 LAB
 MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE – CANADA CENTRE FOR
 INLAND WATERS, BURLINGTON, ONTARIO

Sample No.	Location	Description	Asbestos Content
0053A	Crawlspace, Location 805	fibreboard at foundation walls	None detected ⁽¹⁾
0053B	Crawlspace, Location 805	fibreboard at foundation walls	None detected ⁽¹⁾
0053C	Crawlspace, Location 805	fibreboard at foundation walls	None detected ⁽¹⁾
0054A	Crawlspace, Location 805	tar paper at foundation walls	None detected ⁽¹⁾
0054B	Crawlspace, Location 805	tar paper at foundation walls	None detected ⁽¹⁾
0054C	Crawlspace, Location 805	tar paper at foundation walls	None detected ⁽¹⁾
0055A	Tunnel to WTC	rough wall plaster	None detected ⁽¹⁾
0055B	Tunnel to WTC	rough wall plaster	None detected ⁽¹⁾
0055C	Tunnel to WTC	rough wall plaster	None detected ⁽¹⁾
0055D	Tunnel to WTC	rough wall plaster	None detected ⁽¹⁾
0055E	Tunnel to WTC	rough wall plaster	None detected ⁽¹⁾
0056A-A	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 1 portion	None detected ⁽¹⁾
0056A-B	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 1 portion	None detected ⁽¹⁾
0056A-C	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 2 portion	None detected ⁽¹⁾
0056A-D	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 2 portion	None detected ⁽¹⁾
0056B-A	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 1 portion	None detected ⁽¹⁾
0056B-B	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 1 portion	None detected ⁽¹⁾
0056B-C	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 2 portion	None detected ⁽¹⁾
0056B-D	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 2 portion	None detected ⁽¹⁾
0056C-A	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 1 portion	None detected ⁽¹⁾

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY – PHASE 0 LAB
 MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE – CANADA CENTRE FOR
 INLAND WATERS, BURLINGTON, ONTARIO

Sample No.	Location	Description	Asbestos Content
0056C-B	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 1 portion	None detected ⁽¹⁾
0056C-D	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – vinyl 2 portion	None detected ⁽¹⁾
0056C-D	Guard shack, Location 807	(12" x 12") blue vinyl floor tile over beige vinyl floor tile – mastic 2 portion	None detected ⁽¹⁾
0057A-A	Guard shack, Location 807	smooth wall plaster – finish coat	None detected ⁽¹⁾
0057A-B	Guard shack, Location 807	smooth wall plaster – base coat	None detected ⁽¹⁾
0057B-A	Guard shack, Location 807	smooth wall plaster – finish coat	None detected ⁽¹⁾
0057B-B	Guard shack, Location 807	smooth wall plaster – base coat	None detected ⁽¹⁾
0057C-A	Guard shack, Location 807	smooth wall plaster – finish coat	None detected ⁽¹⁾
0057C-B	Guard shack, Location 807	smooth wall plaster – base coat	None detected ⁽¹⁾
0058A	WTC Mechanical penthouse	paring cement on condensate pipe fitting	25% chrysotile ⁽¹⁾
0059A	WTC Mechanical penthouse	paring cement on joints of condensate tank	20% chrysotile ⁽¹⁾
0060A	WTC, second floor corridor	drywall joint compound	None detected ⁽¹⁾
0060B	WTC, second floor corridor	drywall joint compound	None detected ⁽¹⁾
0060C	WTC, second floor corridor	drywall joint compound	None detected ⁽¹⁾
0061A	WTC, second floor corridor	sprayed fireproofing	None detected ⁽¹⁾
0061B	WTC, second floor corridor	sprayed fireproofing	None detected ⁽¹⁾
0061C	WTC, second floor corridor	sprayed fireproofing	None detected ⁽¹⁾
0061D	Room S221	sprayed fireproofing	None detected ⁽¹⁾
0061E	Room S221	sprayed fireproofing	None detected ⁽¹⁾

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY – PHASE 0 LAB
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Sample No.	Location	Description	Asbestos Content
0062A-A	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062A-B	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062B-A	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062B-B	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062C-A	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062C-B	Room S202	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062D-A	Women's washroom. Location 860	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062D-B	Women's washroom. Location 860	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062E-A	Women's washroom. Location 860	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0062EA-B	Women's washroom. Location 860	smooth wall plaster at windows – finish coat	None detected ⁽¹⁾
0063A-A	Janitor's closet, Location 839	(12" x 12") vinyl floor tile-beige – vinyl portion	3% chrysotile ⁽¹⁾
0063A-B	Janitor's closet, Location 839	(12" x 12") vinyl floor tile-beige – mastic portion	None detected ⁽¹⁾
0063B-B	Janitor's closet, Location 839	(12" x 12") vinyl floor tile-beige – mastic portion	None detected ⁽¹⁾
0063C-B	Janitor's closet, Location 839	(12" x 12") vinyl floor tile-beige – mastic portion	None detected ⁽¹⁾
0064A-A	Room S214	(12" x 12") vinyl floor tile-beige with grey streaks – vinyl portion	3% chrysotile ⁽¹⁾
0064A-B	Room S214	(12" x 12") vinyl floor tile-beige with grey streaks – mastic portion	None detected ⁽¹⁾
0064B-B	Room S214	(12" x 12") vinyl floor tile-beige with grey streaks – mastic portion	None detected ⁽¹⁾
0064C-B	Room S214	(12" x 12") vinyl floor tile-beige with grey streaks – mastic portion	None detected ⁽¹⁾
0065A	Corridor, Location 846	drywall joint compound	None detected ⁽¹⁾
0065B	Corridor, Location 846	drywall joint compound	None detected ⁽¹⁾
0065C	Corridor, Location 846	drywall joint compound	None detected ⁽¹⁾

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 MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE – CANADA CENTRE FOR
 INLAND WATERS. BURLINGTON, ONTARIO

Sample No.	Location	Description	Asbestos Content
0066A	Backstage of Auditorium	drywall joint compound	None detected ⁽¹⁾
0066B	Backstage of Auditorium	drywall joint compound	None detected ⁽¹⁾
0066C	Backstage of Auditorium	drywall joint compound	None detected ⁽¹⁾
0067A	Portable office in Pilot Plant	(2' x 4') ceiling tile-pinhole and lengthwise fissure	None detected ⁽¹⁾
0067B	Portable office in Pilot Plant	(2' x 4') ceiling tile-pinhole and lengthwise fissure	None detected ⁽¹⁾
0067C	Portable office in Pilot Plant	(2' x 4') ceiling tile-pinhole and lengthwise fissure	None detected ⁽¹⁾
0068A	Room S130	drywall joint compound	None detected ⁽¹⁾
0068B	Room S130	drywall joint compound	None detected ⁽¹⁾
0068C	Room S130	drywall joint compound	None detected ⁽¹⁾
0069A-A	Storage Room, Location 864	rough plaster on ceiling and column – finish coat	0.6% chrysotile ⁽¹⁾
0069A-B	Storage Room, Location 864	rough plaster on ceiling and column – base coat	None detected ⁽¹⁾
0069B-B	Storage Room, Location 864	rough plaster on ceiling and column – base coat	None detected ⁽¹⁾
0069C-B	Storage Room, Location 864	rough plaster on ceiling and column – base coat	None detected ⁽¹⁾
0070A	Lobby of North Annex	texture finish on drywall ceiling	None detected ⁽¹⁾
0070B	Lobby of North Annex	texture finish on drywall ceiling	None detected ⁽¹⁾
0070C	Lobby of North Annex	texture finish on drywall ceiling	None detected ⁽¹⁾
0071A-A	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾
0071A-B	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0071B-A	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾
0071B-B	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0071C-A	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – vinyl portion	None detected ⁽¹⁾
0071C-B	Washroom C113	(12" x 12") vinyl floor tile-beige with brown flecks – mastic portion	None detected ⁽¹⁾
0072A	Washroom C113	drywall joint compound	None detected ⁽¹⁾
0072B	Corridor in WTC Annex	drywall joint compound	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0072C	Stairwell in WTC Annex	drywall joint compound	None detected ⁽¹⁾
0074A	Exterior tank	tar over fibreglass insulation	None detected ⁽¹⁾
0074B	Exterior tank	tar over fibreglass insulation	None detected ⁽¹⁾
0074C	Exterior tank	tar over fibreglass insulation	None detected ⁽¹⁾
0075A-A	WTC exterior soffit	rough plaster – finish coat	0.8% chrysotile ⁽¹⁾
0075A-B	WTC exterior soffit	rough plaster – base coat	0.8% chrysotile ⁽¹⁾
0076A-A	Exterior soffits of W&W Building	rough plaster – finish coat	1% chrysotile ⁽¹⁾
0076A-B	Exterior soffits of W&W Building	rough plaster – base coat	None detected ⁽¹⁾
0076B-B	Exterior soffits of W&W Building	rough plaster – base coat	None detected ⁽¹⁾
0076C-B	Exterior soffits of W&W Building	rough plaster – base coat	None detected ⁽¹⁾
0077A	Room H160	sprayed fireproofing	None detected ⁽¹⁾
0077B	Room H160	sprayed fireproofing	None detected ⁽¹⁾
0077C	Room H160	sprayed fireproofing	None detected ⁽¹⁾
0077D	Room H160	sprayed fireproofing	None detected ⁽¹⁾
0077E	Room H160	sprayed fireproofing	None detected ⁽¹⁾
0078A	Warehouse, Location 131	drywall joint compound	None detected ⁽¹⁾
0078B	Warehouse, Location 131	drywall joint compound	None detected ⁽¹⁾
0078C	Warehouse, Location 131	drywall joint compound	None detected ⁽¹⁾
0079A-A	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – vinyl portion	None detected ⁽¹⁾
0079A-B	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – mastic portion	None detected ⁽¹⁾
0079B-A	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – vinyl portion	None detected ⁽¹⁾
0079B-B	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – mastic portion	None detected ⁽¹⁾
0079C-A	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – vinyl portion	None detected ⁽¹⁾
0079C-B	Room L112	(12" x 12") vinyl floor tile-pink with brown flecks – mastic portion	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0080A-A	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -vinyl portion	None detected ⁽¹⁾
0080A-B	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -mastic portion	None detected ⁽¹⁾
0080B-A	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -vinyl portion	None detected ⁽¹⁾
0080B-B	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -mastic portion	None detected ⁽¹⁾
0080C-A	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -vinyl portion	None detected ⁽¹⁾
0080C-B	Zooplankton Lab, Location 50	vinyl sheet flooring-grey with white and black flecks -mastic portion	None detected ⁽¹⁾
0081A-A	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – vinyl portion	None detected ⁽¹⁾
0081A-B	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – mastic portion	None detected ⁽¹⁾
0081B-A	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – vinyl portion	None detected ⁽¹⁾
0081B-B	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – mastic portion	None detected ⁽¹⁾
0081C-A	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – vinyl portion	None detected ⁽¹⁾
0081C-B	Portable Office in Pilot Plant	(12" x 12") vinyl floor tile-grey with white and black flecks – mastic portion	None detected ⁽¹⁾
0082A	Office Portable, Location 956	(12" x 12") vinyl floor tile-white with blue and grey flecks – vinyl portion	None detected ⁽¹⁾
0082B-A	Office Portable, Location 956	(12" x 12") vinyl floor tile-white with blue and grey flecks – vinyl portion	None detected ⁽¹⁾
0082B-A	Office Portable, Location 956	(12" x 12") vinyl floor tile-white with blue and grey flecks – mastic portion	None detected ⁽¹⁾
0082C	Office Portable, Location 956	(12" x 12") vinyl floor tile-white with blue and grey flecks – vinyl portion	None detected ⁽¹⁾
0083A	Room W105	smooth wall plaster	None detected ⁽¹⁾
0083B	Room W105	smooth wall plaster	None detected ⁽¹⁾
0083C	Room W105	smooth wall plaster	None detected ⁽¹⁾
0084A	Storage outside H160	sprayed fireproofing	None detected ⁽¹⁾

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Sample No.	Location	Description	Asbestos Content
0084B	Storage outside H160	sprayed fireproofing	None detected ⁽¹⁾
0084C	Storage outside H160	sprayed fireproofing	None detected ⁽¹⁾
0085A	Outside H160	drywall joint compound	None detected ⁽¹⁾
0085B	Outside H160	drywall joint compound	None detected ⁽¹⁾
0085C	Outside H160	drywall joint compound	None detected ⁽¹⁾
0086A-A	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – vinyl portion	None detected ⁽¹⁾
0086A-B	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – mastic portion	None detected ⁽¹⁾
0086B-A	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – vinyl portion	None detected ⁽¹⁾
0086B-B	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – mastic portion	None detected ⁽¹⁾
0086C-A	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – vinyl portion	None detected ⁽¹⁾
0086C-B	Portable outside WTC Warehouse	(12" x 12") vinyl floor tile-beige with grey lines – mastic portion	None detected ⁽¹⁾
0001A	WTC Building – Treatment Room	transite panel	10-25% chrysotile ⁽²⁾
1-A	Room W224D	(12" x 12") vinyl floor tile-dark grey with black streaks-vinyl portion	2% chrysotile ⁽³⁾
1-A	Room W224D	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾
1-B	Room W224F	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾
1-C	Room W224FD	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾
2-A	Room W221	(12" x 12") vinyl floor tile-white with black streaks-vinyl portion	None detected ⁽³⁾
2-A	Room W221	(12" x 12") vinyl floor tile-white with black streaks-black mastic	None detected ⁽³⁾
2-A	Room W221	(12" x 12") vinyl floor tile-white with black streaks-yellow mastic	None detected ⁽³⁾
2-B	Room W221	(12" x 12") vinyl floor tile-white with black streaks-vinyl portion	None detected ⁽³⁾
2-B	Room W221	(12" x 12") vinyl floor tile-white with black streaks-black mastic	None detected ⁽³⁾

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Sample No.	Location	Description	Asbestos Content
2-B	Room W221	(12" x 12") vinyl floor tile-white with black streaks-yellow mastic	None detected ⁽³⁾
2-C	Room W224G	(12" x 12") vinyl floor tile-white with black streaks-vinyl portion	None detected None detected (TEM) ⁽³⁾
2-C	Room W221	(12" x 12") vinyl floor tile-white with black streaks-black mastic	None detected ⁽³⁾
2-C	Room W221	(12" x 12") vinyl floor tile-white with black streaks-yellow mastic	None detected ⁽³⁾
3-A	Room W224G	hot water heating pipe fitting insulation	25% chrysotile ⁽³⁾
4-A	Room W224A	drywall joint compound	None detected ⁽³⁾
4-B	Room W224A	drywall joint compound	None detected ⁽³⁾
4-C	Room W224A	drywall joint compound	None detected ⁽³⁾
5-A	Room W224A	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
5-B	Room W224A	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
5-C	Room W224F	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
6-A	Room W224	levelling compound	None detected ⁽³⁾
6-B	Room W224	levelling compound	None detected ⁽³⁾
6-C	Room W224	levelling compound	None detected ⁽³⁾
7-A	Room R262	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
7-B	Room R262	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
7-C	Room R273	(2' x 4') ceiling tile-dotted with raised bumps	None detected ⁽³⁾
8-A	Room R262	pipe straight insulation (anti-sweat)	None detected ⁽³⁾
8-A	Room R262	pipe straight insulation (anti-sweat)-tar paper	None detected ⁽³⁾
8-B	Room R262	pipe straight insulation (anti-sweat)	None detected ⁽³⁾
8-B	Room R262	pipe straight insulation (anti-sweat)-tar paper	None detected ⁽³⁾
8-C	Room R262	pipe straight insulation (anti-sweat)	None detected ⁽³⁾
8-C	Room R262	pipe straight insulation (anti-sweat)-tar paper	None detected ⁽³⁾

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Sample No.	Location	Description	Asbestos Content
9-A	Room R262	(12" x 12") vinyl floor tile-white with black streaks	None detected ⁽³⁾
9-A	Room R262	(12" x 12") vinyl floor tile-white with black streaks-mastic	None detected ⁽³⁾
9-A	Room R262	(12" x 12") vinyl floor tile-white with black streaks-levelling compound	2% chrysotile ⁽³⁾
9-B	Room R262	(12" x 12") vinyl floor tile-white with black streaks	None detected ⁽³⁾
9-B	Room R262	(12" x 12") vinyl floor tile-white with black streaks-mastic	None detected ⁽³⁾
9-C	Room R262	(12" x 12") vinyl floor tile-white with black streaks	None detected None detected (TEM) ⁽³⁾
9-C	Room R262	(12" x 12") vinyl floor tile-white with black streaks-mastic	None detected None detected (TEM) ⁽³⁾
10-A	Room R261	(12" x 12") vinyl floor tile-dark grey with black streaks	2% chrysotile ⁽³⁾
10-A	Room R261	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾
10-B	Room R261	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾
10-C	Room R261	(12" x 12") vinyl floor tile-dark grey with black streaks-mastic	None detected ⁽³⁾

NOTES:

- (1) Sample result obtained from Pinchin report entitled "Asbestos Assessment – Canada Centre for Inland Waters – 867 Lakeshore Road, Burlington, Ontario", dated July 12, 2013.
- (2) Sample analyzed by Pinchin on August 17, 2017.
- (3) Sample result obtained from Arcadis report entitled "Designated Substances and Hazardous Materials Survey – Canada Centre for Inland Waters Fit Up Project – 867 Lakeshore Road, Burlington, Ontario", dated February 18, 2016.

Based on visual observations and results of laboratory analyses of samples collected by Arcadis, the following provides a summary of the asbestos-containing materials found to be present in the various CCIW Campus buildings, based on visual observations and results of laboratory analyses of samples collected by Arcadis and Pinchin.

The asbestos-containing materials were generally observed to be in good condition. Summaries of the asbestos-containing materials and approximate quantities are provided below.

A&L Building

- thermal insulation applied to sections of pipe fittings, straights and equipment in the third floor mechanical rooms;

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- thermal insulation applied to sections of pipe fittings and straights in the eighth floor mechanical room;
- thermal insulation applied to sections of pipe fittings and straights in Service Core Rooms L420, L517, LL621 and L716;
- thermal insulation applied to sections of pipe fittings in Service Core Rooms L558 and L758;
- thermal insulation applied to pipe fittings in the stairwells located on Floors 1, 3, 5 and 7;
- vinyl sheet flooring paper backing in Rooms L730, L730A and L730B;
- vinyl sheet flooring in Rooms L145 and L145A;
- drywall joint compound located at the walls adjacent to the freight elevator and service elevator on all floors;
- cement exhaust pipe in Service Core Rooms L420, L457, L517, L558, L621, L658, L716 and L755, the eighth floor mechanical room and on the roof;
- cement exhaust pipe in the ceiling spaces of various Rooms on Floors 4, 5, 6 and 7;
- cement board counter tops in various Rooms on Floors 4, 5, 6 and 7;
- cement board applied to fume hoods and chemical storages in various Rooms on Floors 4, 5, 6 and 7;
- (12" x 12') grey vinyl floor tiles at various throughout Floors 1 to 8, including beneath carpeting;
- grey caulking applied around concrete columns, and around door frames at stairwells on Floors 1 to 8; and
- brown duct seal applied to ducts at various areas throughout the ceiling spaces of Floors 4 to 7.

Table 4.2
Summary of Asbestos-Containing Materials and Approximate Quantities
A&L Building

Description	Location	Approximate Quantity
First Floor		
pipe fitting insulation	L wing central and south stairwells	4 fittings each
door frame caulking	L wing north, central and south stairwells	1 m ² each
vinyl sheet flooring	Rooms L145 and L145a	200 m ²
(12" x 12") vinyl floor tiles	Room L101 and adjacent corridor	40 m ²
(12" x 12") vinyl floor tiles	northeast office area (L121-L144)	400 m ²
(12" x 12") vinyl floor tiles	L149 office area	200 m ²
(12" x 12") vinyl floor tiles	Offices L146 and L148	20 m ²
door frame caulking	R wing west stairwell	1 m ²

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(12" x 12") vinyl floor tiles	North half of R wing	1,000 m ²
(12" x 12") vinyl floor tiles	South half of R wing	500 m ²
Second Floor		
pipe fitting insulation	L wing central stairwells	4 fittings
door frame caulking	L wing north, central and south stairwells	1 m ² each
(12" x 12") vinyl floor tiles	Room L226 office area	70 m ²
(12" x 12") vinyl floor tiles	Room L215J	10 m ²
(12" x 12") vinyl floor tiles	Room L202A	5 m ²
(12" x 12") vinyl floor tiles	Room L203	75 m ²
(12" x 12") vinyl floor tiles	Room L203	75 m ²
door frame caulking	R wing west stairwell	1 m ²
(12" x 12") vinyl floor tiles	Throughout	2100 m ²
levelling compound	Rooms R262, 262A, 263, 263A and 254	75 m ²
Third Floor Mechanical Room (A&L)		
door frame caulking	L wing north, central and south stairwells	1 m ² each
(12" x 12") vinyl floor tiles	Washrooms	10 m ²
pipe straight insulation	throughout	100 m +
pipe fitting insulation	throughout	500 +
insulation on ducts	South side	75 m ²
Third Floor Mechanical Room (R&D)		
door frame caulking	west stairwell	1 m ²
pipe straight insulation	throughout	10 m +
pipe fitting insulation	throughout	250 +
insulation on ducts	South side	75 m ²
Fourth Floor		
door frame caulking	all stairwells	1 m ² each
column frame caulking	Rooms L420 and L457	24 m ² each
(12" x 12") vinyl floor tiles	Throughout	2100 m ²
pipe straight insulation	Service Core Room L420	5 m
pipe fitting insulation	Service Core Room L420	10
cement exhaust pipe	Service Core Room L420	1.5 m
cement exhaust pipe	Service Core Room L457	10 m
drywall joint compound	at elevators	10 m ²
cement exhaust pipe	Room L411	10 m
cement exhaust pipe	Room L413	10 m
cement door in fume hood	Room L424	5 m ²
cement door in fume hood	Room L435	5 m ²
cement door in fume hood	Room L475	15 m ²
cement counter top	Room L475	5 m ²
cement exhaust pipe	Room L467A	10 m
cement exhaust pipe	Room L465A	10 m
cement exhaust pipe	Room L461/463	10 m

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drywall joint compound	Room L454 south wall	10 m ²
cement exhaust pipe	Room L454	10 m
cement exhaust pipe	Room L451	10 m
cement exhaust pipe	Room L450	10 m
cement exhaust pipe	Room L448	10 m
cement door in fume hood and fume hoods	Room L448	15 m ²
cement exhaust pipe	Room L446	10 m
cement door in fume hood and fume hoods	Room L446	15 m ²
cement exhaust pipe	Room L444	5 m
cement door in fume hood and fume hoods	Room L444	15 m ²
cement exhaust pipe	Room L441	5 m
cement exhaust pipe	Room L439	5 m
cement door in fume hood and fume hoods	Room L439	15 m ²
Fifth Floor		
door frame caulking	all stairwells	1 m ² each
column frame caulking	Rooms L517 and L558	24 m ² each
(12" x 12") vinyl floor tiles	Throughout	2100 m ²
pipe fitting insulation	stairwells	4 fittings each
drywall joint compound	at elevators	10 m ²
pipe straight insulation	Service Core Room L517	5 m
pipe fitting insulation	Service Core Room L517	10
cement exhaust pipe	Service Core Room L517	10 m
pipe fitting insulation	Service Core Room L558	20
cement exhaust pipe	Service Core Room L558	20 m
cement exhaust pipe	Room L504	50 m
cement door in fume hood and fume hoods	Room L504	15 m ²
cement exhaust pipe	Room L506	50 m
cement door in fume hood and fume hoods	Room L506	15 m ²
cement counter top	Room L510	5 m ²
cement door in fume hood and fume hoods	Room L510	15 m ²
cement door in fume hood and fume hoods	Room L514	15 m ²
cement counter top	Room L515	5 m ²
cement door in fume hood and fume hoods	Room L515	15 m ²
cement exhaust pipe	Room L533	10 m
cement counter top	Room L576	3 m ²
cement exhaust pipe	Room L576	5 m
cement exhaust pipe	Room L574	5 m

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cement counter top	Room L572	20 m ²
cement door in fume hood and fume hoods	Room L570	5 m ²
cement exhaust pipe	Room L570	5 m
cement door in fume hood and fume hoods	Room L567	5 m ²
cement exhaust pipe	Room L567	5 m
cement counter top	Room L567A	20 m ²
cement exhaust pipe	Room L551	5 m
cement door in fume hood and fume hoods	Room L548	5 m ²
cement exhaust pipe	Room L548	5 m
cement counter top	Room L548	10 m ²
cement door in fume hood and fume hoods	Room L541/543	5 m ²
cement exhaust pipe	Room L541/543	5 m
cement counter top	Room L541/543	10 m ²
cement door in fume hood and fume hoods	Room L539	5 m ²
cement exhaust pipe	Room L539	5 m
cement door in fume hood and fume hoods	Room L537	15 m ²
cement exhaust pipe	Room L537	5 m
Sixth Floor		
door frame caulking	all stairwells	1 m ² each
column frame caulking	Rooms L621 and L658	24 m ² each
(12" x 12") vinyl floor tiles	Throughout	2100 m ²
drywall joint compound	at elevators	10 m ²
pipe straight insulation	Service Core Room L621	5 m
pipe fitting insulation	Service Core Room L621	4
cement exhaust pipe	Service Core Room L621	10 m
cement exhaust pipe	Service Core Room L658	40 m
cement exhaust pipe	Room L605	5 m
cement counter top	Room L605	20 m ²
cement door in fume hood and fume hoods	Room L605	5 m ²
cement exhaust pipe	Room L608	5 m
cement door in fume hood and fume hoods	Room L608	5 m ²
cement exhaust pipe	Room L610	5 m
cement door in fume hood and fume hoods	Room L610	10 m ²
cement door in fume hood and fume hoods	Room L625	10 m ²
cement exhaust pipe	Room L625A/627	5 m
cement door in fume hood and fume hoods	Room L625A/627	10 m ²

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cement exhaust pipe	Room L629	5 m
cement door in fume hood and fume hoods	Room L629	10 m ²
cement exhaust pipe	Room L632	5 m
cement counter top	Room L632	15 m ²
cement door in fume hood and fume hoods	Room L684	10 m ²
cement exhaust pipe	Room L684	5 m
cement counter top	Room L684	15 m ²
cement door in fume hood and fume hoods	Room L678/680	10 m ²
cement exhaust pipe	Room L678/680	5 m
cement counter top	Room L678/680	15 m ²
cement door in fume hood and fume hoods	Room L674/674A	10 m ²
cement exhaust pipe	Room L674/674A	5 m
cement counter top	Room L674/674A	15 m ²
cement counter top	Room L672	10 m ²
cement door in fume hood and fume hoods	Room L672	5 m ²
cement door in fume hood	Room 670	5 m ²
cement exhaust pipe	Room L668	5 m
cement counter top	Room L668	15 m ²
cement door in fume hood and fume hoods	Room L668	10 m ²
cement door in fume hood and fume hoods	Room L6668	10 m ²
cement counter top	Room L651	20 m ²
cement door in fume hood and fume hoods	Room L651	10 m ²
cement exhaust pipe	Room L646	2 m
cement counter top	Room L646	15 m ²
cement exhaust pipe	Room L643	2 m
cement exhaust pipe	Room L639	2 m
Seventh Floor		
door frame caulking	all stairwells	1 m ² each
column frame caulking	Rooms L716 and L755	24 m ² each
(12" x 12") vinyl floor tiles	Throughout	2100 m ²
drywall joint compound	at elevators	10 m ²
pipe straight insulation	Service Core Room L716	1.5 m
pipe fitting insulation	Service Core Room L716	8
cement exhaust pipe	Service Core Room L716	15 m
pipe fitting insulation	Service Core Room L755	8
cement exhaust pipe	Service Core Room L755	10 m
cement door in fume hood and fume hoods	Room L711	6 m ²

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cement exhaust pipe	Room L711	2 m
cement exhaust pipe	Room L721A/724	2 m
cement exhaust pipe	Room L725	10 m
cement door in fume hood and fume hoods	Room L727	6 m ²
cement exhaust pipe	Room L727	10 m
Vinyl sheet flooring with paper backing	Rooms L730, 730A and 730B	90 m ²
cement exhaust pipe	Room L774	15 m
cement door in fume hood and fume hoods	Room L774	10 m ²
cement counter top	Room L768	10 m ²
cement door in fume hood and fume hoods	Room L768	10 m ²
cement exhaust pipe	Room L768	8 m
cement counter top	Room L766	10 m ²
cement door in fume hood and fume hoods	Room L766	10 m ²
cement exhaust pipe	Room L766	8 m
cement counter top	Room L765	10 m ²
cement door in fume hood and fume hoods	Room L765	10 m ²
cement exhaust pipe	Room L765	8 m
cement counter top	Room L761	10 m ²
cement door in fume hood and fume hoods	Room L761	10 m ²
cement exhaust pipe	Room L761	8 m
cement exhaust pipe	Room L760	10 m
cement counter top	Room L750	10 m ²
cement door in fume hood and fume hoods	Room L750	10 m ²
cement exhaust pipe	Room L747	8 m
cement counter top	Room L747	15 m ²
cement door in fume hood and fume hoods	Room L745	15 m ²
cement exhaust pipe	Room L745	8 m
cement counter top	Room L740	10 m ²
cement counter top	Room L738	5 m ²
cement exhaust pipe	Room L745	8 m
Eighth Floor Mechanical Room		
(12" x 12") vinyl floor tiles	Laboratory at elevator	20 m ²
pipe straight insulation	Throughout	25 m
pipe fitting insulation	Throughout	100 +
cement exhaust pipe	Throughout	200 m ² +
pipe fitting insulation	Elevator Control Room	6

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W&W Building

- thermal insulation applied to sections of pipe fittings at various locations on the first and second floors;
- (12" x 12") vinyl floor tiles at various locations on the first and second floors;
- asbestos cement board in the fume hood in Room W236; and
- asbestos plaster applied to exterior soffits.

Table 4.3
Summary of Asbestos-Containing Materials and Approximate Quantities
W&W Building

Description	Location	Approximate Quantity
First Floor		
(12" x 12") vinyl floor tiles	Rooms W101, 101A, 101B and 101C	60 m ²
(12" x 12") vinyl floor tiles	Rooms W106	60 m ²
pipe fitting insulation	Room W107B	5
pipe fitting insulation	Room W108	5
pipe fitting insulation	Room W109	40
pipe fitting insulation	Room W110	20
pipe fitting insulation	Room W110A	20
pipe fitting insulation	Room W111	10
pipe fitting insulation	Room W112	10
pipe fitting insulation	Room W113	15
pipe fitting insulation	Room W113A	15
pipe fitting insulation	Area north of W111/113	20
pipe fitting insulation	Area north of W108/109	100 +
pipe fitting insulation	Rigging Shop	5
pipe fitting insulation	Open Warehouse area	100 +
Second Floor		
(12" x 12") vinyl floor tiles	Rooms W209, 211, 212B, 214, 214B, 216, 216A, 216B, 217, 218, 220, 223A, 224, 224B, 224C, 224E, 224D, 224F, 228	15 m ² each
pipe fitting insulation	Room W201	4
pipe fitting insulation	Room W207	8
pipe fitting insulation	Room W205	10
pipe fitting insulation	Room W209	10
pipe fitting insulation	Room W238	2
pipe fitting insulation	Room W242	4
pipe fitting insulation	Room W244	6
pipe fitting insulation	Room W240	2

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pipe fitting insulation	Room W249	4
pipe fitting insulation	Corridor from Room W207 to 241	10
cement door in fume hood and fume hoods	Room W236	5 m ²

Boiler Plant

- thermal insulation applied to mechanical equipment in the Upper Mezzanine levels;
- thermal insulation applied to pipe fittings in the tunnel accessed from the Boiler Plant and the main floor of the Boiler Plant;
- (12" x 12") vinyl floor tiles in the Office; and
- asbestos cement board applied to the south wall above the windows in the Upper Mezzanine level.

Table 4.4
Summary of Asbestos-Containing Materials and Approximate Quantities
Boiler Plant

Description	Location	Approximate Quantity
Ground Floor		
pipe fitting insulation	north side	10
pipe fitting insulation	tunnel	10
Upper Mezzanine		
equipment insulation	north side	15 m ²
cement board	south side	5 m ²

Hydraulics Building

- thermal insulation applied to pipe fittings at various locations on the first and second floors;
- thermal insulation applied to equipment in the second floor equipment room; and
- (12" x 12") vinyl floor tiles at various locations throughout the building.

Table 4.5
Summary of Asbestos-Containing Materials and Approximate Quantities
Hydraulics Building/Hydraulics Offices

Description	Location	Approximate Quantity
Hydraulics Building Ground Floor		
pipe fitting insulation	Room H140	15
(12" x 12") vinyl floor tiles	Room H140	80 m ²
pipe fitting insulation	open area adjacent to H140	45
pipe fitting insulation	open area adjacent to H147, 160	45
pipe fitting insulation	Room H160	20
pipe fitting insulation	Room H176	25
pipe fitting insulation	Room H174	10
Hydraulics Building Second Floor		
pipe fitting insulation	Room H251 (above 175)	2
pipe fitting insulation	Room above H173	10
ducting insulation	Equipment Room	15 m ²
pipe fitting insulation	Equipment Room	5 m ²
pipe fitting insulation	Above Labs	35
pipe fitting insulation	Above Offices	10
(12" x 12") vinyl floor tiles	Room H241 area	100 m ²
(12" x 12") vinyl floor tiles	Room H240	10 m ²
Hydraulics Offices Building Ground Floor		
(12" x 12") vinyl floor tiles	Corridor	100 m ²
(12" x 12") vinyl floor tiles	Room H125	5 m ²
Hydraulics Offices Building Second Floor		
(12" x 12") vinyl floor tiles	Throughout (except washrooms)	800 m ²

North Annex

- (12" x 12") vinyl floor tiles in Room C114.

Table 4.6
Summary of Asbestos-Containing Materials and Approximate Quantities
North Annex

Description	Location	Approximate Quantity
Ground Floor		
(12" x 12") vinyl floor tiles	Room H140	80 m ²

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WTC Building

- thermal insulation applied to pipe fittings at various locations on the first floor;
- asbestos cement products in Rooms S104, S106, the walls between the two plant areas, and the ceiling space of the main first floor corridor, and Rooms S217/220, S221 and S224;
- asbestos countertop in Room S146;
- asbestos plaster in Room S128, and applied to exterior soffits;
- (12" x 12") vinyl floor tiles in Rooms S214, S215 and S216.

Table 4.7
Summary of Asbestos-Containing Materials and Approximate Quantities
WTC Building

Description	Location	Approximate Quantity
WTC Building First Floor		
pipe fitting insulation	Room S104	50
cement board in fume hood	Room S104	10 m ²
pipe fitting insulation	Room S106	15
pipe fitting insulation	Room S108	10
pipe fitting insulation	Room S109	15
pipe fitting insulation	Room S111	5
pipe fitting insulation	Room S121	45
pipe fitting insulation	Room S122	40
pipe fitting insulation	Room S123/124	45
pipe fitting insulation	Room S125	6
pipe fitting insulation	Room S127	5
ceiling and column plaster	Room S128	7 m ²
countertop	Room S146	10 m ²
pipe fitting insulation	Plant area at S102	10
pipe fitting insulation	Plant area at S119	100
pipe fitting insulation	East mezzanine at S149	25
transite wall panels	Treatment Room	125 m ²
plaster	Exterior soffits	70 m ²
WTC Building Second Floor		
(12" x 12") vinyl floor tiles	Room S214	30 m ²
(12" x 12") vinyl floor tiles	Room S215	5 m ²
(12" x 12") vinyl floor tiles	Room S216	4 m ²
cement exhaust	Room S217/220	3 m
cement exhaust	Room S221	10 m
cement fume hood door	Room S224	10 m ²

In addition, electrical bus ducts at the campus may have asbestos-containing components.

Thermal insulation and vinyl sheet flooring paper backing are friable materials. The removal, alteration and/or disturbance of less than 1 m² of friable asbestos-containing materials is classified as a Type 2 enclosure operation as specified in O.Reg. 278/05. The removal, alteration and/or disturbance of more than 1 m² of friable asbestos-containing materials is classified as a Type 3 operation.

Vinyl floor tiles, caulking, cement board and duct seal are non-friable materials. Removal of these non-friable asbestos-containing materials can be performed as a Type 1 operation as specified in O.Reg. 278/05 if the material is wetted and the work is done only using non-powered, hand-held tools (see Table C-1 in Appendix C). If the removal work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters, then the work is classified as Type 2. If the power tools do not have HEPA filtered dust collecting devices, then the work is Type 3.

Removal of less than one square metre of drywall in which asbestos-containing joint filling compounds have been used is classified as a Type 1 operation. Removal of one square metre or more of drywall with asbestos-containing joint compounds is a Type 2 operation.

Plaster is a non- or semi-friable material which can become friable when disturbed. According to the Ministry of Labour “*A Guide to the Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations*”, dated November 2007, wetting does not adequately control the spread of dust and fibres during the breaking, cutting, drilling, abrading, grinding, sanding or vibrating of asbestos-containing plaster (as well as stucco and other hard finishes) by means of non-powered hand-held tools. As such, Type 1 procedures cannot be used for work on these materials. The work should therefore be classified as a Type 2 or Type 3 operation depending on the tools used, and the amount of material to be removed.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by Arcadis, including, but not limited to, roofing materials, perimeter/exterior window caulking, gaskets in piping, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, bus ducts, arc chutes, high-grade electrical paper, etc.), etc., and/or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, and above suspended plaster ceilings). Asbestos may also be present in the form of vermiculite insulation in cavities in concrete or cement block walls (used as in-fill insulation). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

4.2 Lead

Samples of the predominant paints in the buildings were collected by Arcadis during the course of the survey. The samples were submitted to EMSL Canada Inc. for analysis of lead content.

The results of the analyses are presented in Table 4.8, and the laboratory report is provided in Appendix B. The sample locations are shown on the floor plans provided in Appendix A. Photographs are provided in Appendix D.

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Table 4.8
Summary of Results of Analyses of Paint Samples for Lead Content
August, September and October 2017

Sample No.	Location	Description	Condition	Lead Content (mg/kg)
A&L Building				
P-1	8 th Floor Mechanical Room	white ceiling paint	Generally good, some flaking observed	1,400
P-2	8 th Floor Mechanical Room	yellow pipe paint	Generally good, some flaking observed	29,000
P-3	R&D Mechanical Room	blue exhaust paint	Generally good, some flaking observed	6,900
P-4	R&D Mechanical Room	green duct paint	Generally good, some flaking observed	150,000
P-5	Corridor at Room L460	white wall paint	Generally good	1,100
P-6	Room L401	black trim paint	Generally good	21
P-7	Room L444	white wall paint	Generally good, minor flaking	480
P-8	Room L513B	white ceiling paint	Generally good	1690
P-9	Corridor at Stair NW6	white wall paint	Good	<10
P-10	Room L756	white ceiling paint	Generally good, minor flaking	31
P-11	Room L754	light yellow wall paint	Good	9.3
P-12	Room L730	yellowish wall paint	Good	8.8
P-12A	Corridor at Room L101	white ceiling paint	Generally good, minor flaking	1,400
P-13	Room R272	white column paint	Generally good, some flaking	2,100
P-231A-1	Room L231A	beige wall paint	Good	4.8

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W&W Building				
P-14	Room W208	yellow wall, ceiling paint	Good	1,400
P-15	Room W209	white wall paint	Good	3,300
249-Paint-1	Room W249	beige floor coating	Generally good, some cracking	<5.0
249-Paint-2	Room W249	white wall paint	Good	2.6
247-Paint-3	Room W247	beige ceiling paint	Generally good, some delaminating	1.3
Boiler Plant				
P--16	Boiler Plant	Grey floor paint	Good	800
WTC Building				
P17	Second floor corridor	White paint on block	Generally good, minor flaking	1,500
P-18	Room S246	White paint	Good	800
P-19	Room S216	White paint on concrete block	Generally good, minor flaking	2,600
P-20	Room S109	Grey paint on concrete	Good	770
North Annex Building				
P-21	Room C113	Grey paint on drywall	Good	3.9

NOTES:

< = Less than.
 mg/kg - milligrams lead per kilogram paint.
 1 mg/kg - 1 part per million (ppm).

Lead was detected at levels above the *Surface Coating Materials Regulations* made under the *Hazardous Products Act* criterion of 90 mg/kg in sixteen of the twenty-two paint samples collected.

The yellow pipe paint in the eighth floor A&L Mechanical room and the green duct paint in the third floor R&D Mechanical Room were observed to be flaking in some locations. As the levels of lead in these paint applications is considered to be high, it is recommended that the flaking paint be removed following measures and procedures outlined in the Ministry of Labour *Guideline – Lead on Construction Projects*, April 2011.

All paint applications were observed to be in generally in good condition, with some flaking paint noted as indicated above.

Lead may also be present in lead pipe, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings.

4.3 Mercury

During the course of our site inspections, fluorescent lights were observed throughout the buildings. Mercury should be assumed to be present as a gas in all fluorescent light tubes. Mercury-containing thermostats were observed at various locations in the buildings. Mercury should also be assumed to be present in paint applications, albeit at low levels.

4.4 Silica

Materials observed in the buildings which should be considered to contain silica included drywall, drywall joint compound, plaster, stucco, concrete, cement block walls, mortar, roofing materials, fireproofing, ceramic tile grout, mortar beds under ceramic tiles, ceiling tiles and cementitious pipe fitting insulation.

4.5 Vinyl Chloride

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products.

4.6 Acrylonitrile

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of construction of ABS products.

4.7 Other Designated Substances

Benzene would be expected to be a component of the diesel fuel observed stored in the Diesel Generator room of the Boiler Plant. Benzene may also be present in small amounts in the various laboratories. No other designated substances (isocyanates, arsenic, ethylene oxide and coke oven emissions) were observed to be present in the subject buildings, and none would be expected to be encountered in any building materials in a form that would represent an exposure concern. Arsenic may be present at low levels in paint applications. The measures and procedures outlined in the *MOL Guideline – Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any arsenic (or mercury) in paint.

4.8 PCBs

Fluorescent lights were observed throughout the designated study areas. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed, are usually an electronic-type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling/removal of the lights.

During the course of performing the building surveys, staff of Rondar Power Services, the building maintenance company, indicated to Arcadis staff that a campus-wide ballast replacement program had occurred in the early 1990s, and all original light ballasts in the building had been removed and replaced.

Most of the transformers observed in the various buildings were of the air-cooled variety, and as such, would not contain PCBs. It was reported that transformers in the Boiler Plant are older, and as such, could contain PCBs.

4.9 Ozone-Depleting Substances (ODS) and Halocarbons

Suspect ODS- or halocarbon-containing equipment was observed at various locations inside the buildings.

In the **A&L Building**, this equipment included drinking fountains, cold drink machines (cafeteria), domestic refrigerators and freezers at various locations throughout the building, mostly in laboratories and adjacent corridors of Floors 4-7, walk-in freezers at various locations on Floors 4-7, cooling units in the Service Core Rooms on Floors 4-7, and wall-mounted air conditioning units in various laboratories on Floors 4-7.

In the **W&W Building**, this equipment included drinking fountains, domestic refrigerators and freezers at various locations in the building, mostly in laboratories, and walk-in freezers at various locations.

In the **Hydraulics Building**, this equipment included domestic refrigerators and freezers, a walk-in freezer and a wall-mounted air conditioning unit.

In the **WTC Building**, this equipment included domestic refrigerators and freezers, and wall-mounted air conditioning units.

In the **North Annex Building**, this equipment included two domestic refrigerators in the second floor corridor.

In **Portable 1**, this equipment included a small domestic refrigerator.

In **Portable 2**, this equipment included several freezer units.

4.10 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was not observed during the course of the investigation.

4.11 Fuel, Oil and Waste Oil Storage

Diesel fuel was observed in drums in the Diesel Generator Room of the Boiler Plant.

4.12 Potential Hazards Associated with Laboratory Decommissioning

Arcadis reviewed a report entitled “*CCIW Lab Report, District 2 Property Management*”, dated October 2011 which provided information on processes carried out in the laboratories at the time of the study. No perchloric acid use was reported. The use of hydrofluoric acid was reported for lab L747. Hydrofluoric acid is extremely irritating and corrosive to the skin and mucous membranes, and will react with water or steam to produce toxic and corrosive fumes. Lab L747 was reported (CCIW Lab Report) to have recently renovated fume hoods.

A total of 52 fume hoods and two biosafety cabinets were observed in the areas included in Phase 0 and Phase 1 of the CCIW Labs, AHUs and Heating Upgrade Project. Environment Canada was unable to confirm whether or not perchloric acid or perchlorates had ever been used in any of these fume hoods. Two fume hoods which are designed for use with perchloric acid and equipped with internal water wash-down capability were noted. Surface wipe testing for perchlorates was therefore conducted to determine levels of perchlorates in residues in fume hoods, exhaust ducts and associated fans.

The results of testing for perchlorates are presented in the report provided in Appendix E.

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY – PHASE 0 LAB
MODERNIZATION PROGRAM AND SPRINKLER SYSTEM UPGRADE – CANADA CENTRE FOR
INLAND WATERS. BURLINGTON, ONTARIO

The publication *Perchlorate and Perchloric Acid Sampling and Analysis, IH75200*, Brookhaven National Laboratory, Final Rev. 8, 03/05/14, specifies a guideline level of 1,250 ug/ft² for perchlorates in wipe samples. Samples with levels less than 1,250 ug/ft² are considered negative for the risk of a fire or explosion hazard. Samples with concentrations greater than 6,250 ug/ft² are considered positive for perchlorates and samples with concentrations between 1,250 and 6,250 ug/ft² are considered “suspect” for the presence of perchlorates.

Environment Canada was not able to provide any information regarding the use of the two biosafety cabinets.

Mercury may be present in drain pipe systems (and/or traps) from sinks, fume hoods, etc. in laboratories. No metal drain pipes were reported to be present in the Phases 0 and 1 project areas, therefore azide residues from reaction of azides with metals would not be expected.

Chemical products and waste chemicals were observed in various laboratories in the buildings.

4.13 Radioactive Materials

During the course of our site inspections, smoke detectors that may contain radioactive materials were observed throughout both buildings. Radioactive sources are also likely present in analytical instruments, such as gas chromatographs.

Standard smoke detectors do not require a radioactive license and can be disposed in a MOECC-licensed landfill.

4.14 Mould

No suspect mould was observed during the course of our site inspections.

A bulk sample of suspect mould-impacted (2' x 4') ceiling tile was collected from Room W249 of the Workshop and Warehouse Building and submitted for analysis for mould. The sample was submitted to the Sporometrics Inc. laboratory for microscopic analysis. Sporometrics is accredited by the ISO/IEC 17025:2005 standard by the Environmental Microbiology Program of the American Hygiene Association Laboratory Accreditation Program. The results of the analysis did not indicate the presence of mould in the sample. The results of the analysis are presented below in Table 4.9, and a copy of the laboratory report is provided in Appendix B.

Table 4.9
Summary of Results of Analysis of Bulk Sample for Mould Growth
W&W Building

Sample No./Description	Location	Fungal Growth Indicated
M-1/ceiling tile	Room W249	No

5 RECOMMENDATIONS

- .1 The flaking yellow pipe paint in the eighth floor A&L Mechanical room and the green duct paint in the third floor R&D Mechanical Room should be removed following procedures detailed in the Ministry of Labour Guideline, Lead on Construction Projects, dated April 2011.
- .2 Refer to the WSP report entitled “*Asbestos Management Plan – Canada Centre for Inland Waters (CCIW) – 867 Lakeshore Road, Burlington, Ontario*”, dated September 2017, which has been created to document the location of and condition of all asbestos-containing materials (ACMs) within the CCIW Campus, and to establish procedures for contractors, maintenance personnel and tenants who may work with, or in close proximity to ACMs.
- .3 Any of the materials identified in Section 4.1 that were not yet sampled, or could not be sampled during the course of performing the Designated Substances and Hazardous Materials Survey, should be sampled and tested for asbestos prior to any disturbance (i.e., at the time of maintenance, construction or demolition work, for example) in accordance with applicable regulatory requirements.

6 USE AND LIMITATIONS OF THIS DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

This report, prepared for Public Services and Procurement Canada, does not provide certification or warranty, expressed or implied, that the investigation conducted by Arcadis identified all designated substances (as defined in the *Ontario Occupational Health and Safety Act*) and hazardous materials in the subject buildings. The work undertaken by Arcadis was directed to provide information on the presence of designated substances in building construction materials based on visual inspection of readily accessible areas in the subject buildings and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content and laboratory analysis of a limited number of paint samples for lead content. The survey did not include for identification of asbestos in equipment (including electrical equipment and wiring), nor material outside of the building (e.g. asphaltic pavement).

The material in this report reflects Arcadis' best judgment in light of the information available at the time of the investigation, which was performed in August – December, 2017, and January and February 2018.

This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

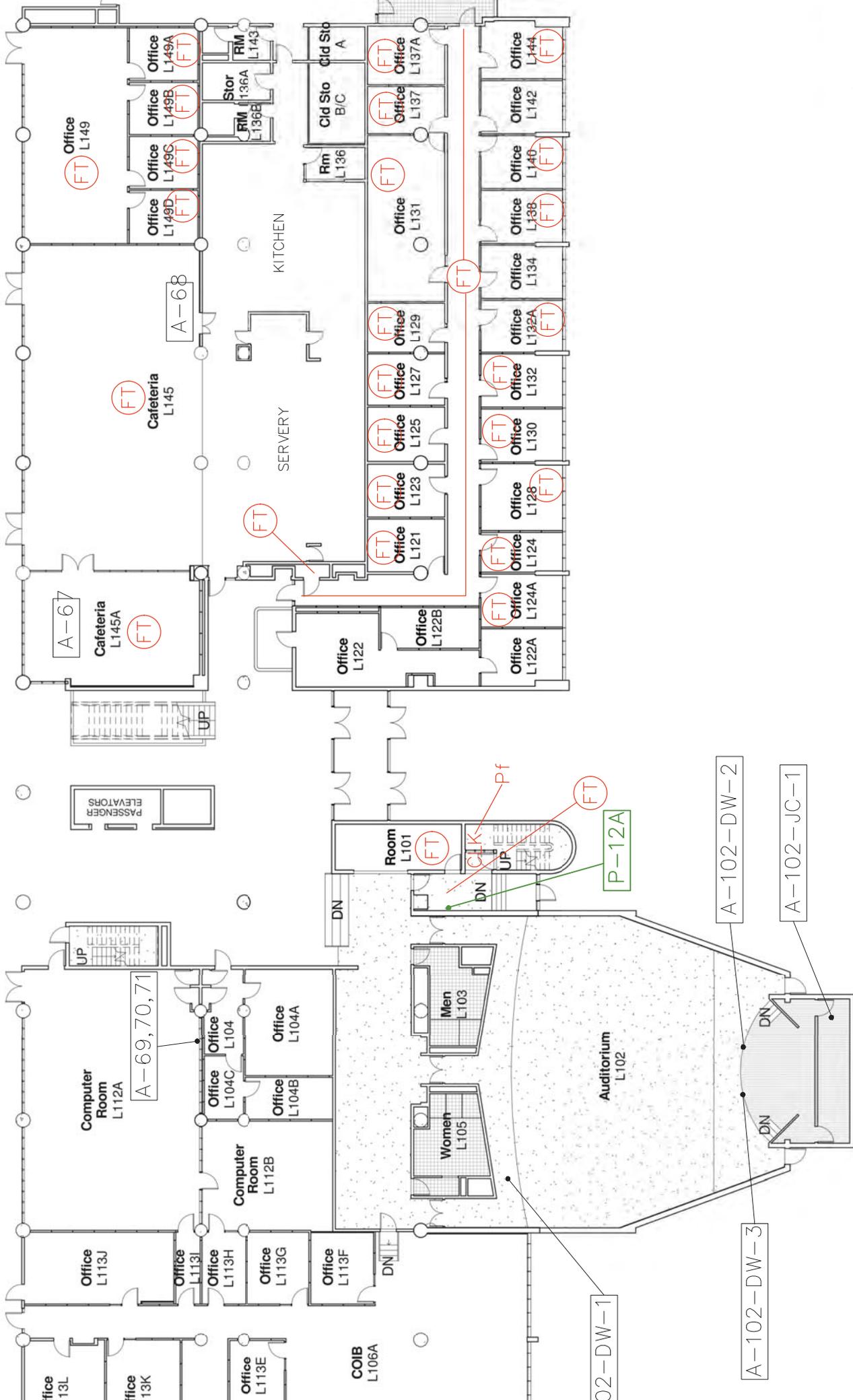
This report was prepared by Arcadis for Public Services and Procurement Canada. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

APPENDIX A

Floor Plans

A-81, A-82

A-65, A-64



NOTES:

REVISIONS:

No.	Date:	By:	Revisions

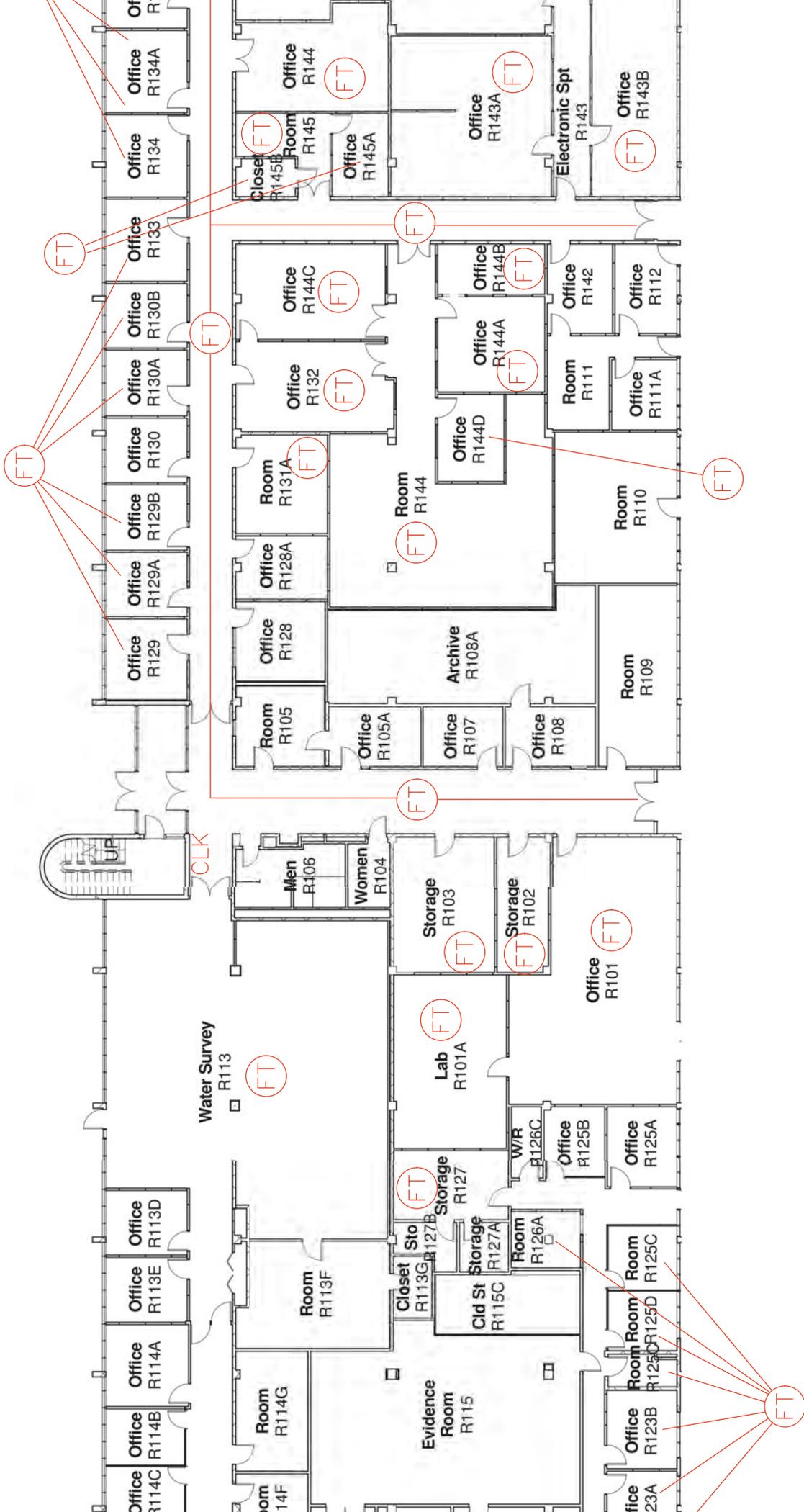
A-65 LOCATION OF BULK SAMPLE

P-12 LOCATION OF PAINT SAMPLE

A-65

P-12

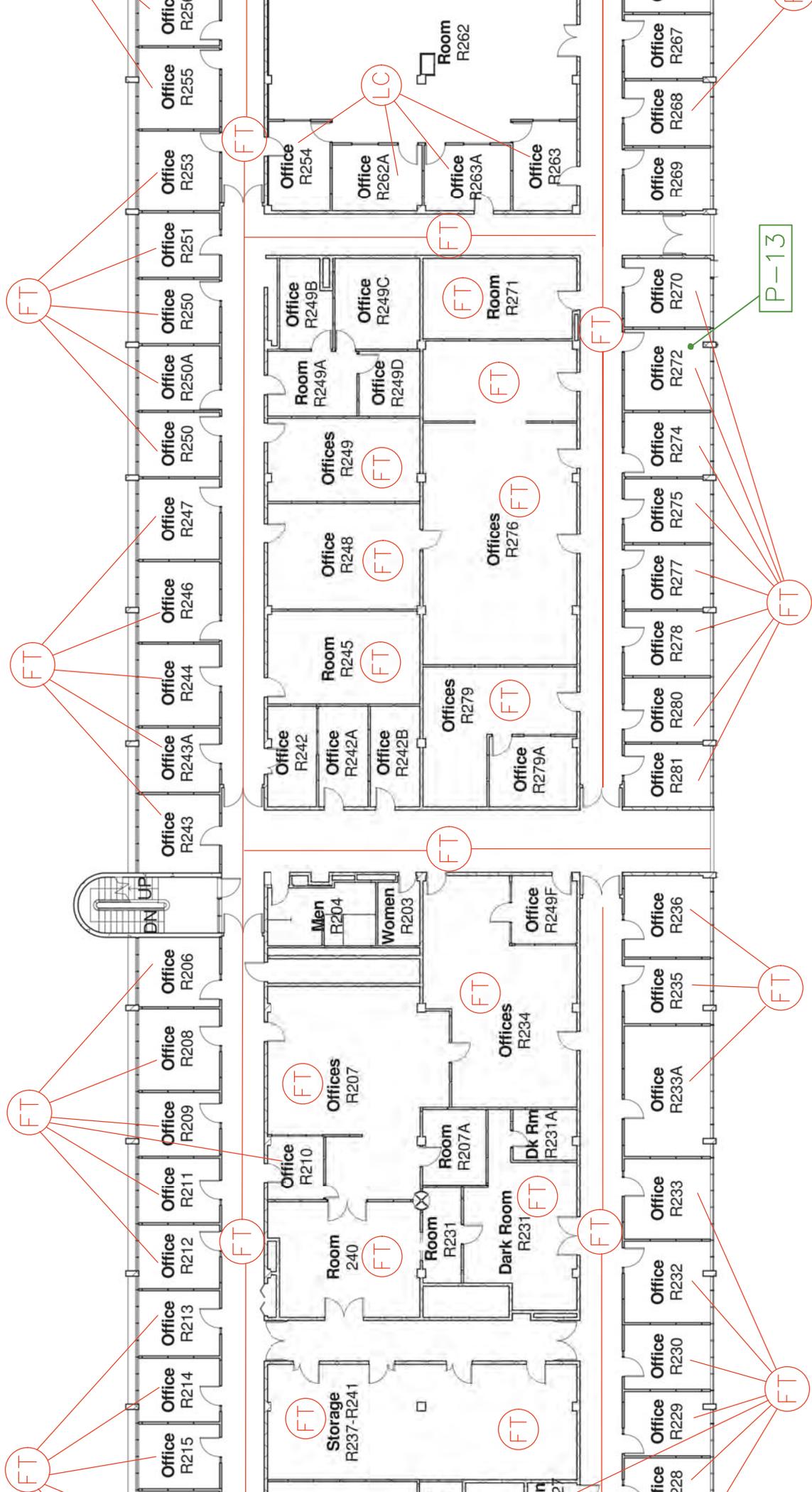
GUIDE



NOTES:

REVISIONS:

No.	Date:	By:	Revisions



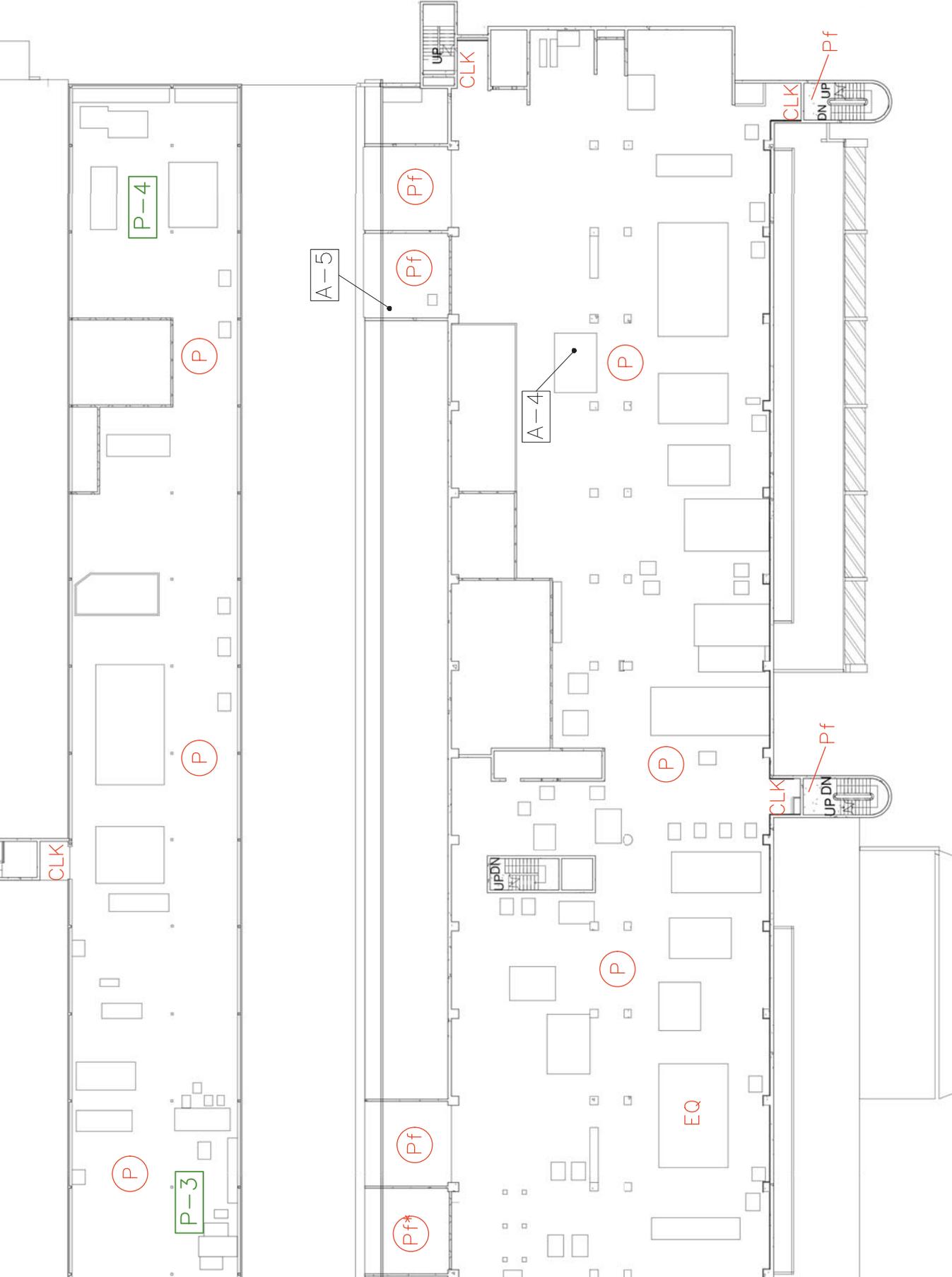
NOTES:

REVISIONS:

No.	Date:	By:	Revisions

R&D BU

A&L BU



NOTES:

REVISIONS:

No.	Date:	By:	Revisions

AL SPACE

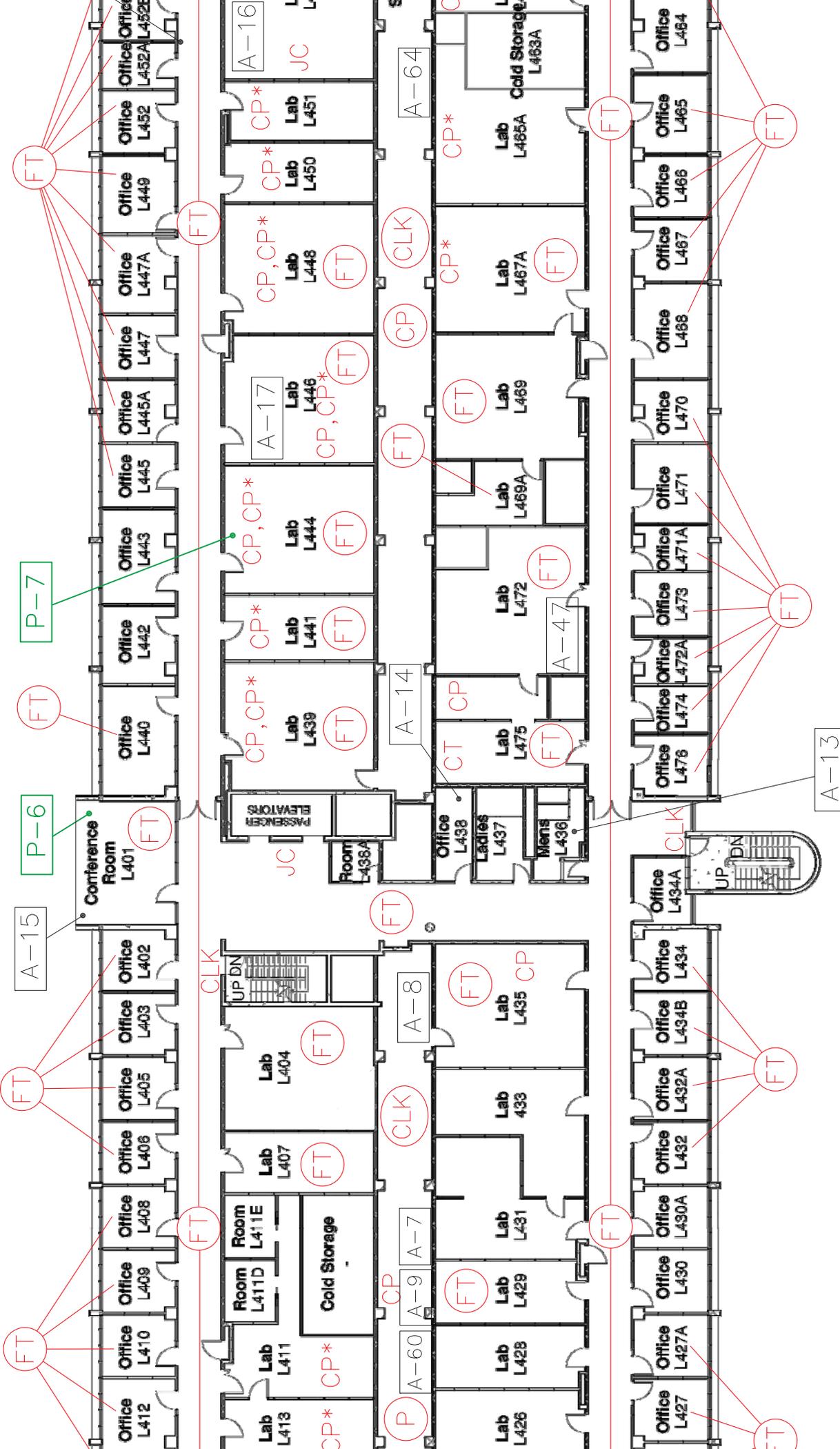
A-5 LOCATION OF BULK SAMPLE

P-3

ON PIPE FITTINGS

P-4 LOCATION OF PAINT SAMPLE

A-4



NOTES:

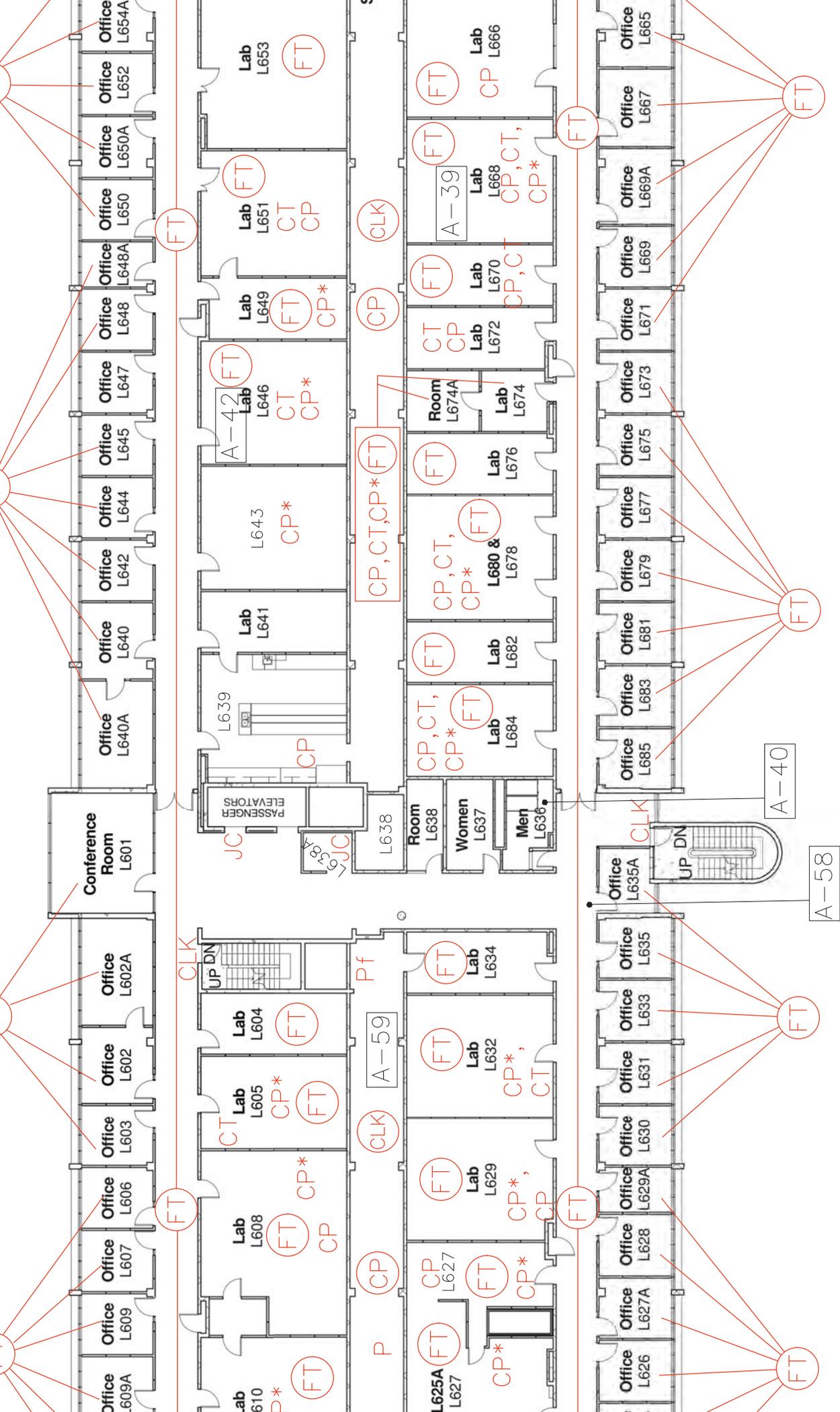
A-15 LOCATION OF BULK SAMPLE

P-6 LOCATION OF PAINT SAMPLE

REVISIONS:

No.	Date:	By:	Revisions

FUNCTIONAL SPACE
 ASSEMBLY
 PRODUCT
 JOINT COMPOUND



NOTES:

REVISIONS:

No.	Date:	By:	Revisions

SPACE

FUNCTIONAL SPACE

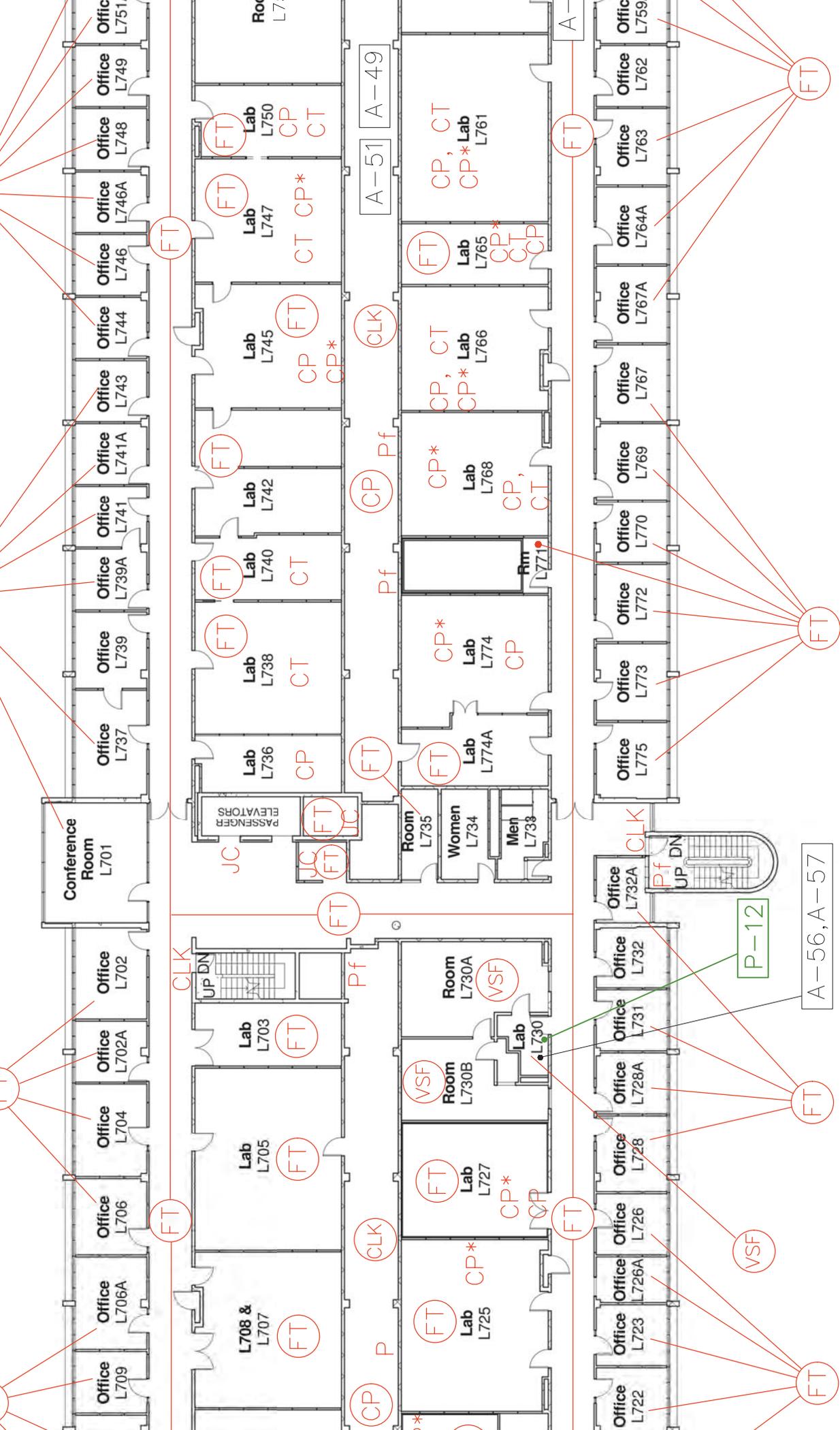
ASSEMBLY

EMENT PRODUCT

YWALL JOINT COMPOUND

A-58 LOCATION OF BULK SAMPLE

P-9 LOCATION OF PAINT SAMPLE



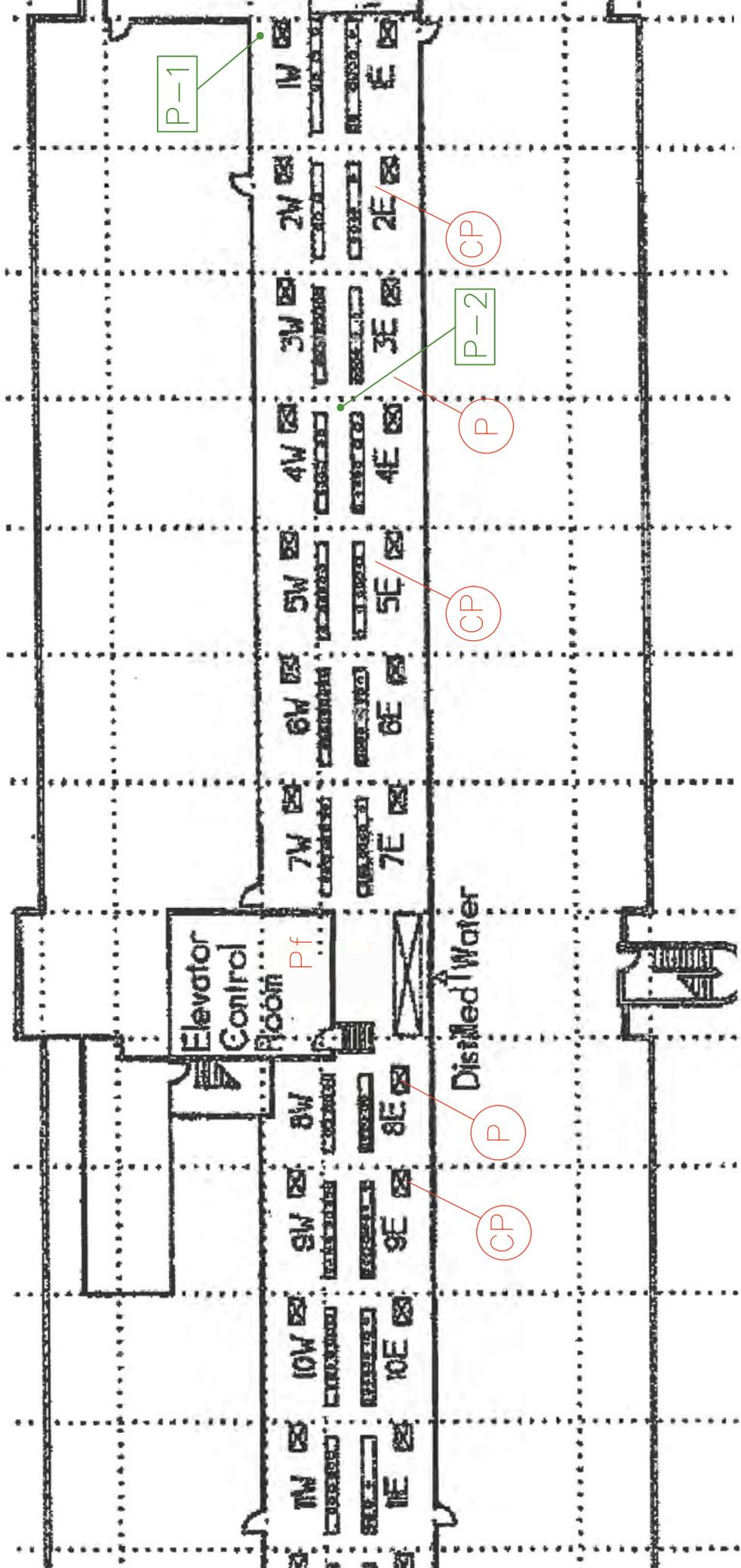
NOTES:

- A-56 LOCATION OF BULK SAMPLE
- P-12 LOCATION OF PAINT SAMPLE

REVISIONS:

No.	Date:	By:	Revisions

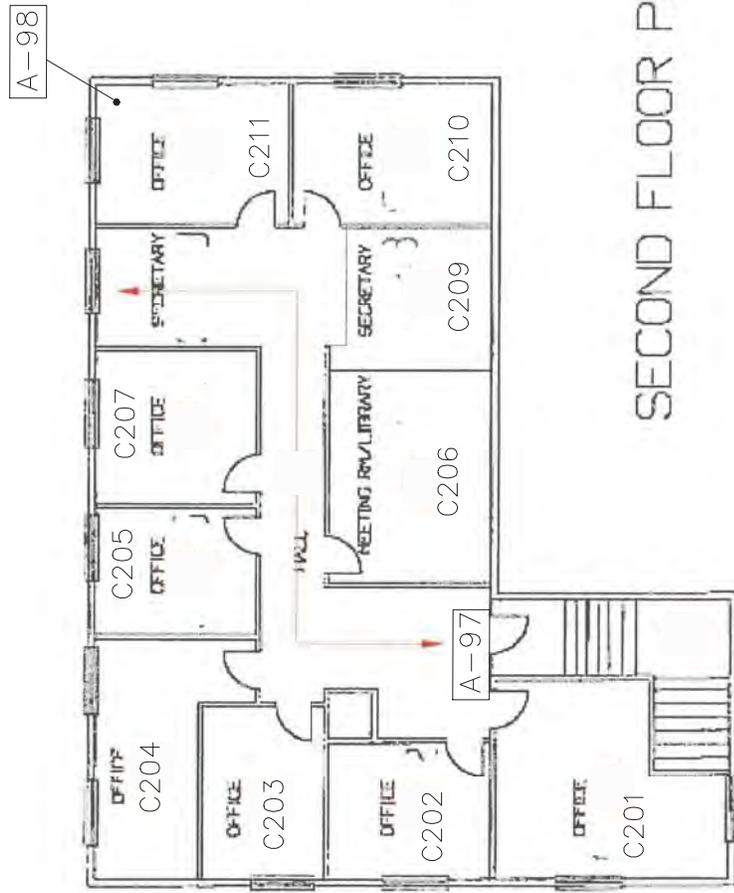
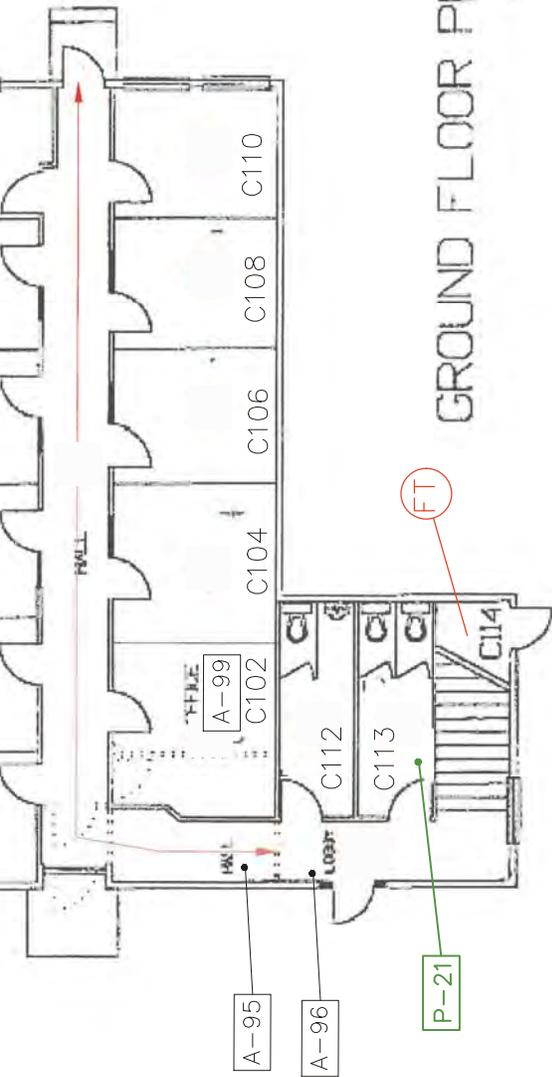
FUNCTIONAL SPACE
 ASSEMBLY
 PRODUCT
 JOINT COMPOUND
 PIPE FITTINGS



NOTES:

REVISIONS:

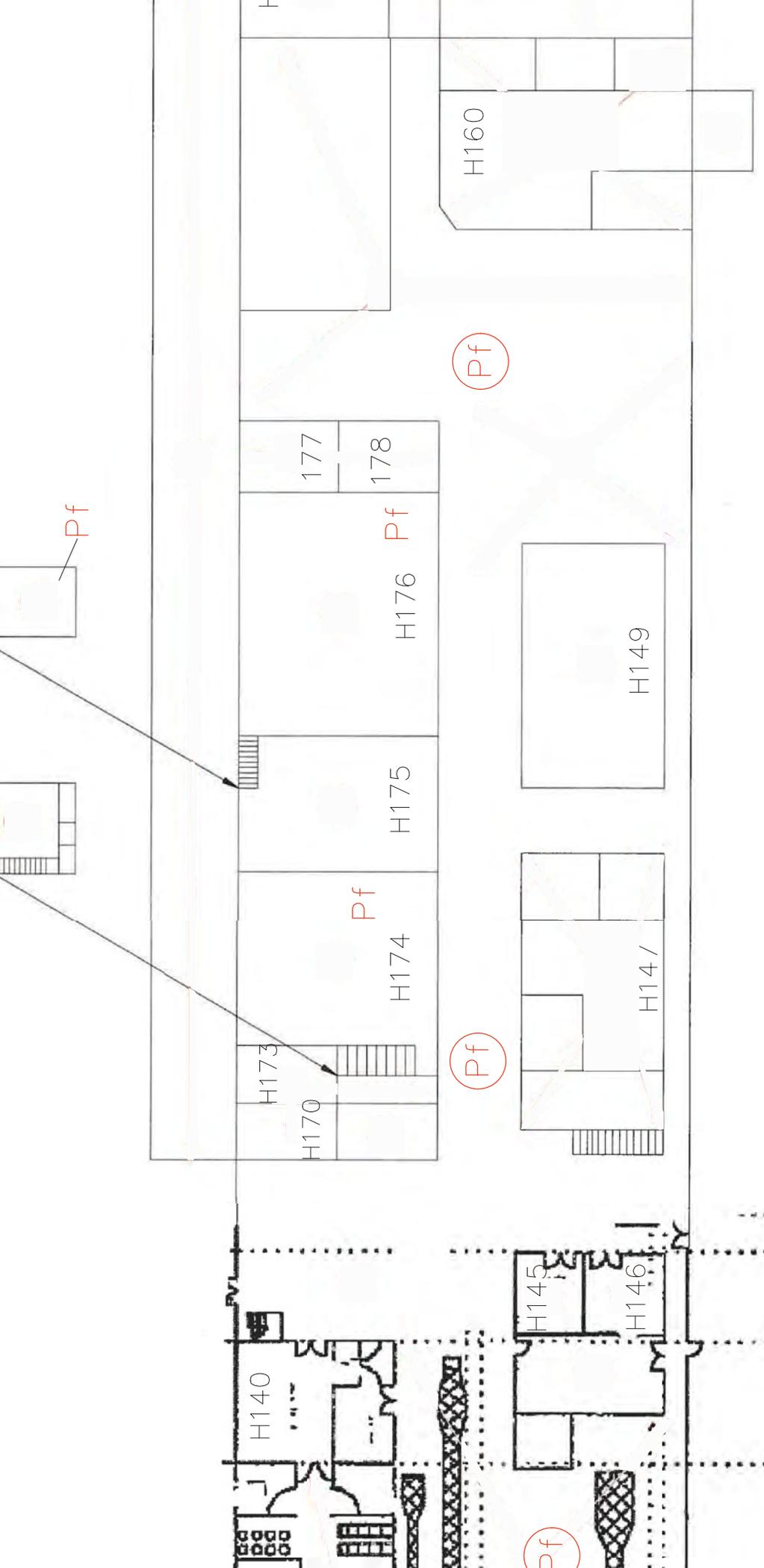
No.	Date:	By:	Revisions



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REVISIONS:

No.	Date:	By:	Revisions



NOTES:

REVISIONS:

No.	Date:	By:	Revisions

H240 (FT)

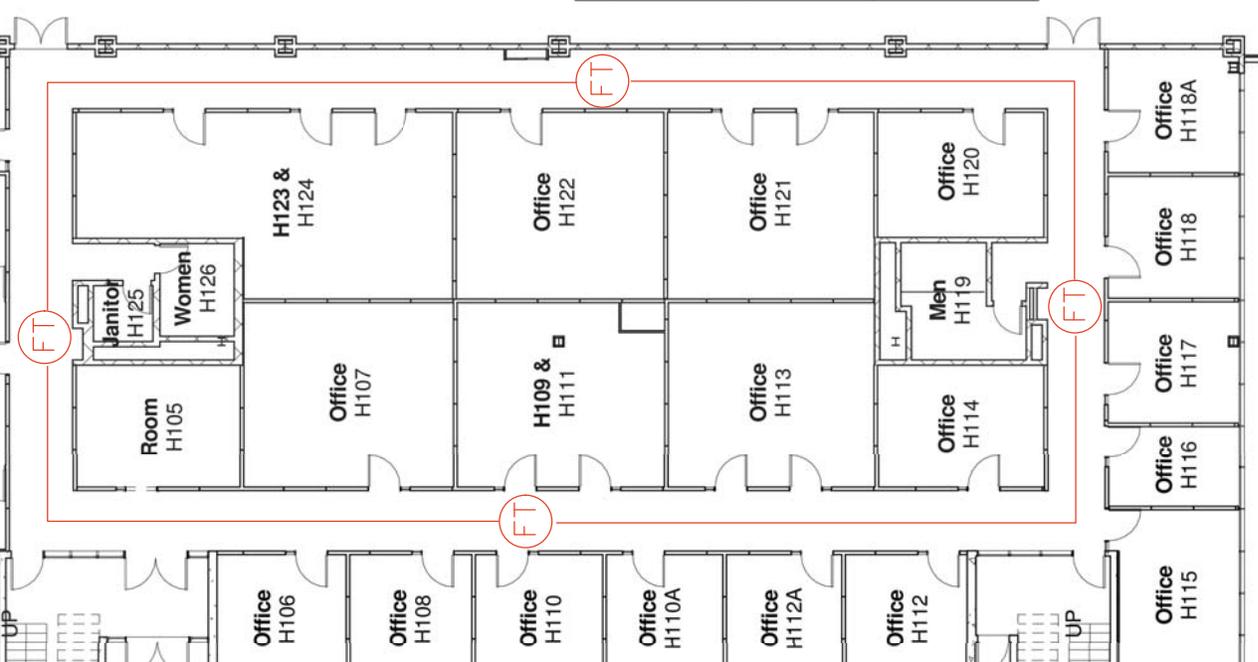


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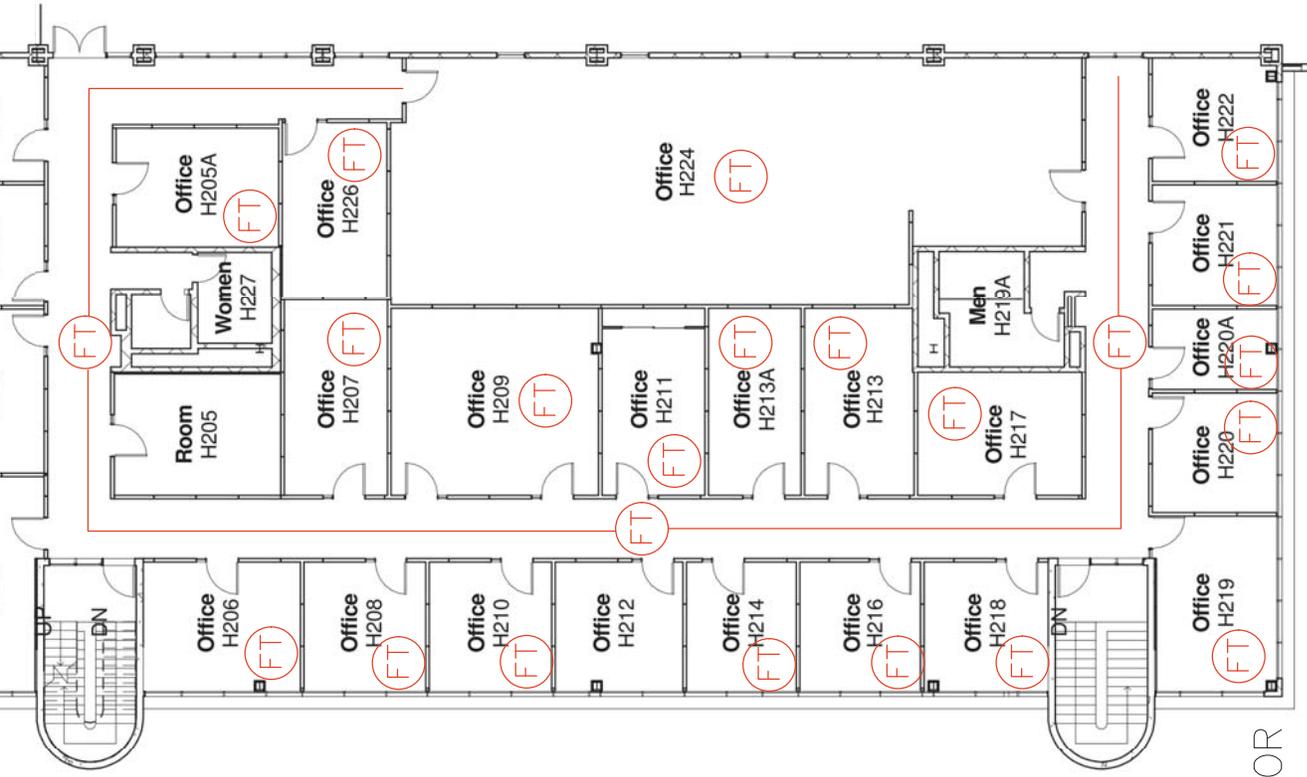
REVISIONS:

No.	Date:	By:	Revisions

CE
 FUNCTIONAL SPACE
 RING



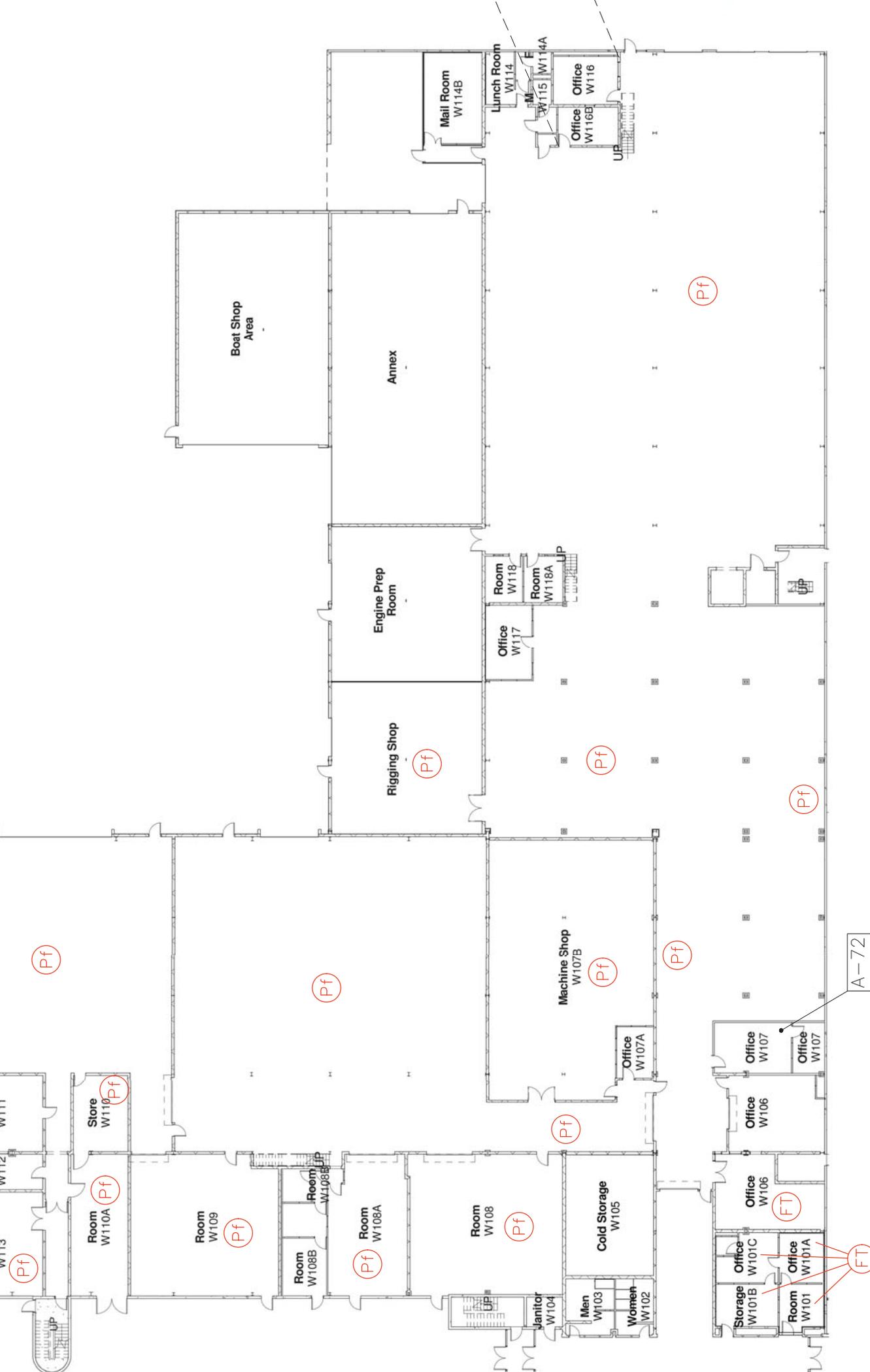
SECOND FLOOR



NOTES:

REVISIONS:

No.	Date:	By:	Revisions



NOTES:

ASBESTOS PLASTER ON EXTERIOR SOFFITS

REVISIONS:

No.	Date:	By:	Revisions

A-72 LOCATION OF BULK SAMPLE

ONAL SPACE
ON PIPE FITTINGS



NOTES:

ADDITIONAL SPACE

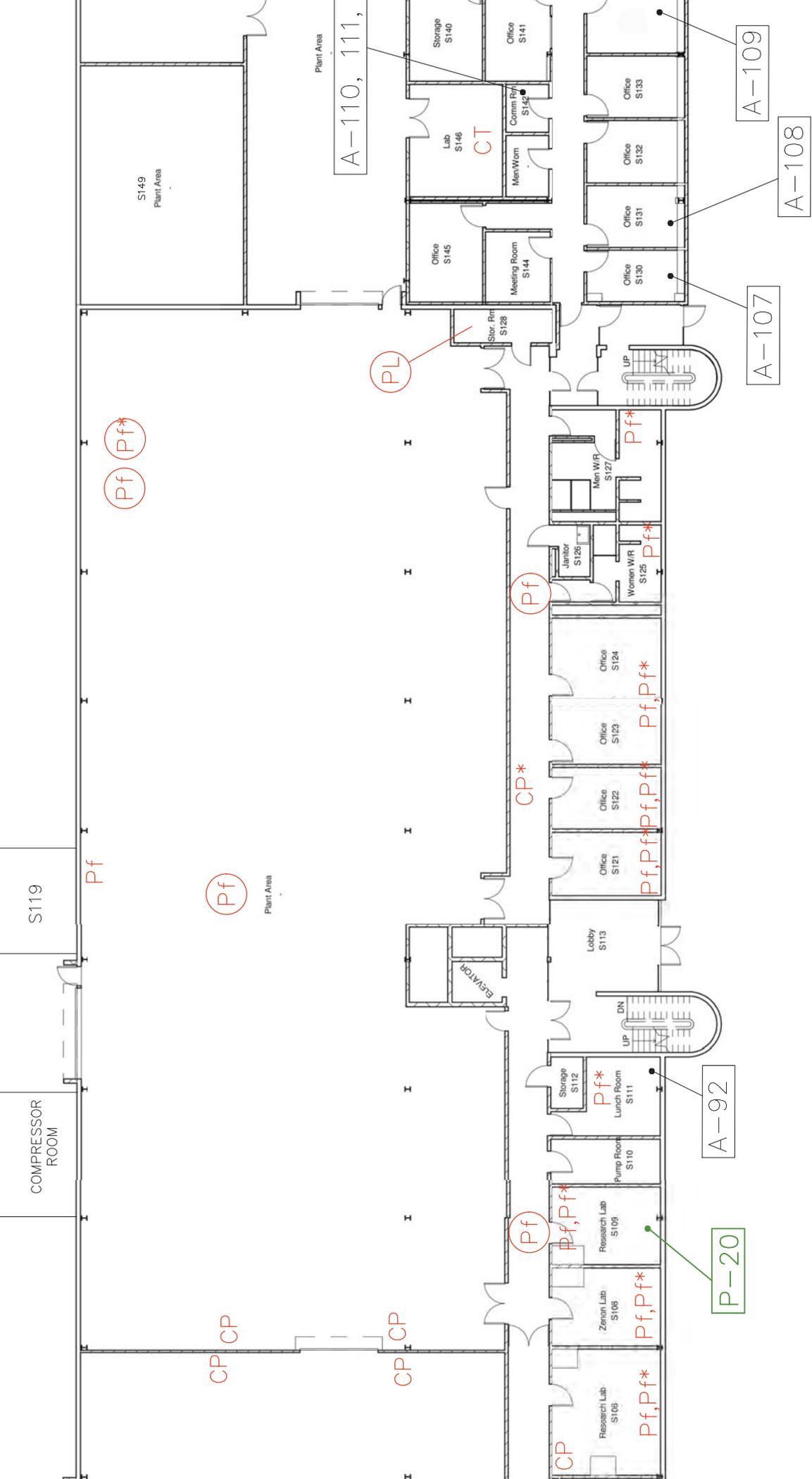
LOCATION OF BULK SAMPLE

A-78A

LOCATION OF BULK SAMPLE

REVISIONS:

No.	Date:	By:	Revisions



NOTES:

ASBESTOS PLASTER AT EXTERIOR SOFFITS

REVISIONS:

No.	Date:	By:	Revisions

ADDITIONAL SPACE

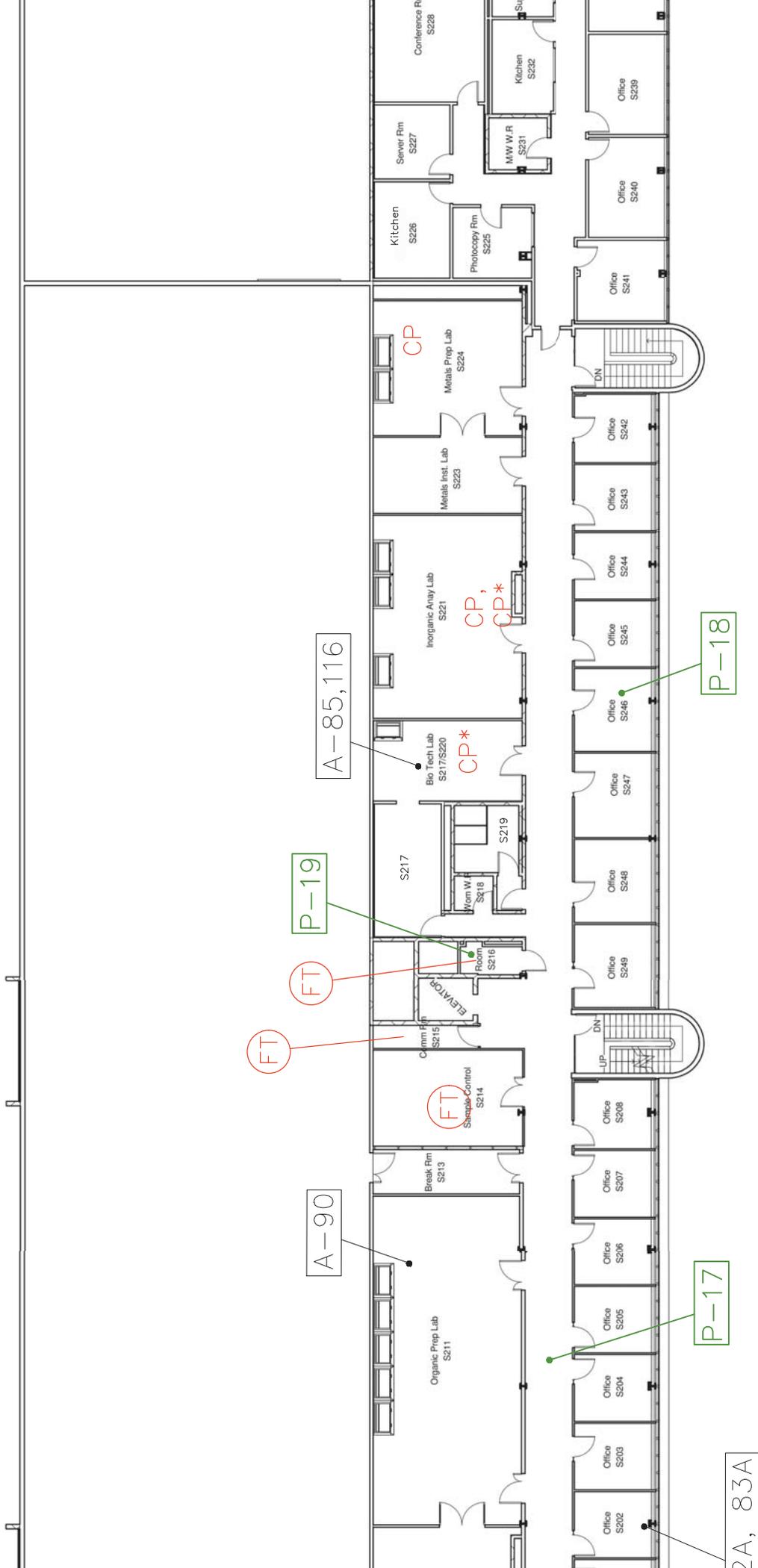
ASSEMBLY

LOCATION OF BULK SAMPLE

A-92

LOCATION OF BULK SAMPLE

LOCATION OF PIPE FITTINGS



NOTES:

REVISIONS:

No.	Date:	By:	Revisions

LOCATION OF BULK SAMPLE

A-94

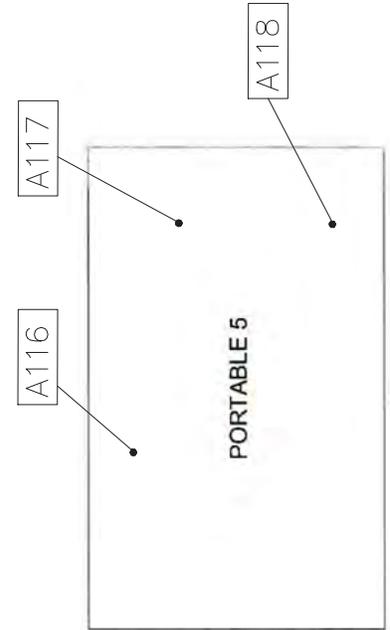
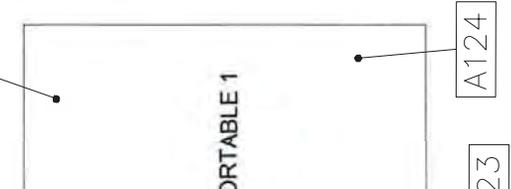
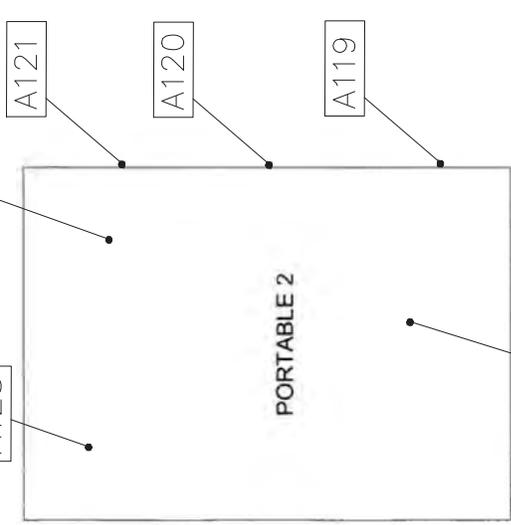
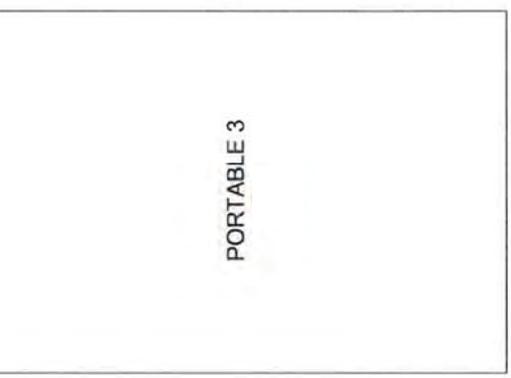
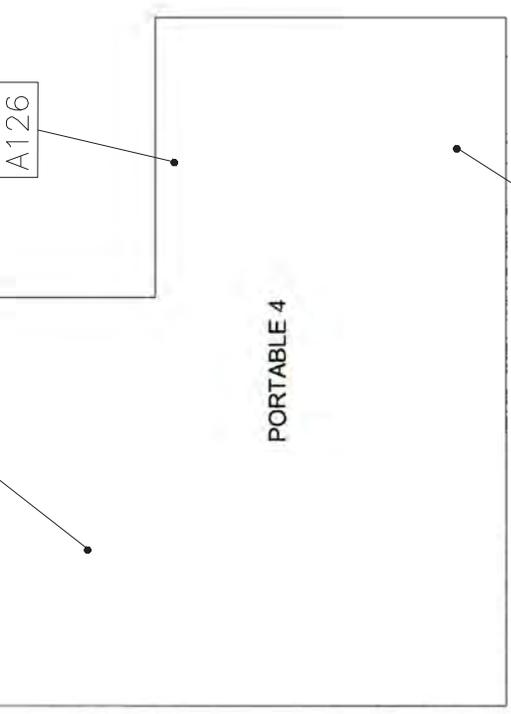
LOCATION OF PAINT SAMPLE

P-17

ADDITIONAL SPACE

MBLY

2A, 83A



NOTES:

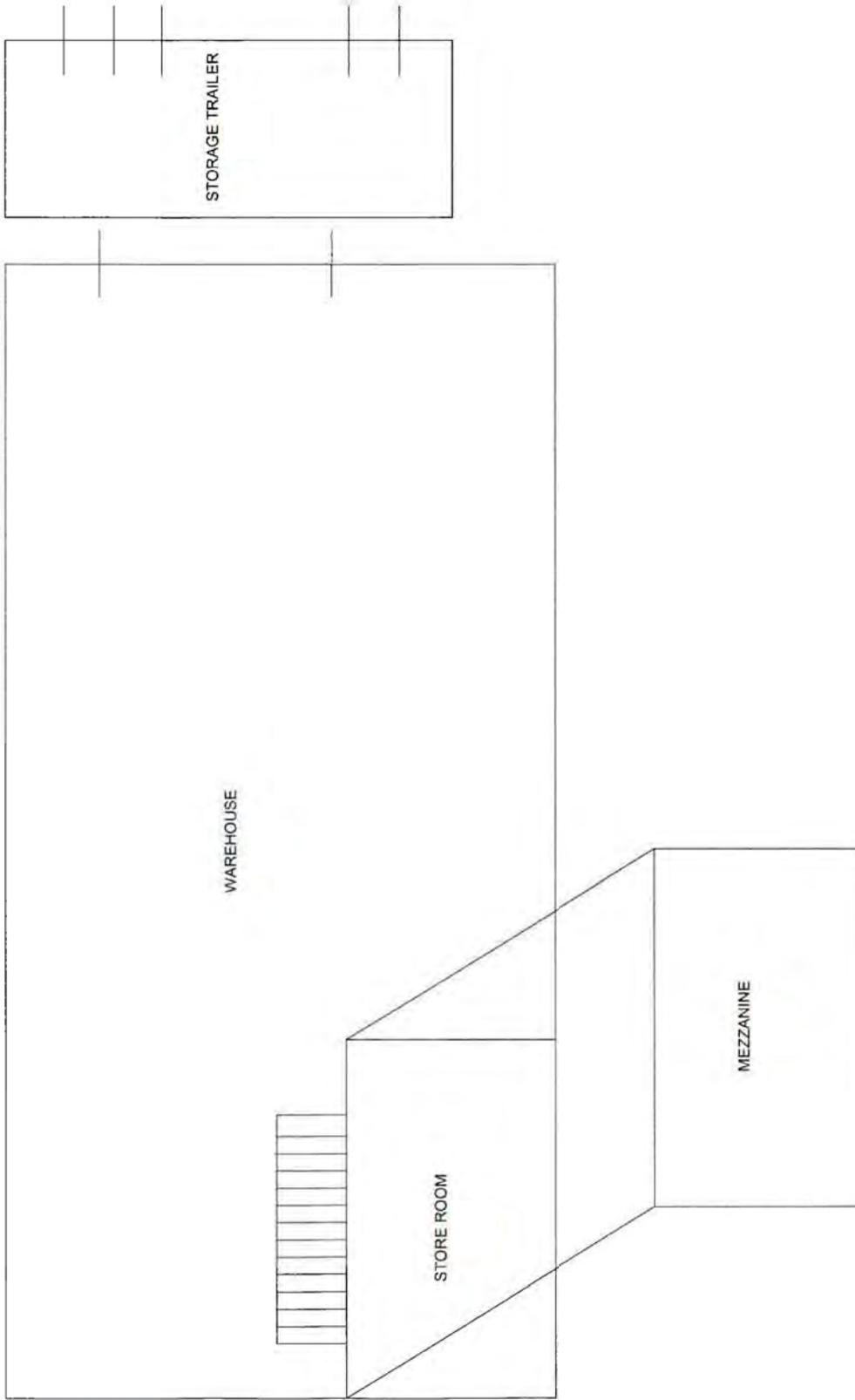
NO ASBESTOS-CONTAINING MATERIALS
WERE OBSERVED IN PORTABLES 1-5.

REVISIONS:

No.	Date:	By:	Revisions

FUNCTIONAL SPACE

LOCATION OF ASBESTOS SAMPLE



NOTES:

NO ASBESTOS-CONTAINING MATERIALS
WERE OBSERVED IN THE WAREHOUSE .

REVISIONS:

No.	Date:	By:	Revisions

APPENDIX B

Laboratory Reports



EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: 289-997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551709706
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Attn: Paul Smith
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4
Proj: CCIW
Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 8/30/2017
Analyzed: 9/05/2017

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-1 **Lab Sample ID:** 551709706-0001

Sample Description: South side of roof/roofing materials-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	9/05/2017	Gray	0.0%	100%	None Detected	

Client Sample ID: A-2-Shingle **Lab Sample ID:** 551709706-0002

Sample Description: Central portion of roof/roofing materials-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	25%	75%	None Detected	

Client Sample ID: A-2-Insulation **Lab Sample ID:** 551709706-0002A

Sample Description: Central portion of roof/roofing materials-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	80%	20%	None Detected	

Client Sample ID: A-2-foam **Lab Sample ID:** 551709706-0002B

Sample Description: Central portion of roof/roofing materials-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Yellow	0%	100%	None Detected	

Client Sample ID: A-3-Shingle **Lab Sample ID:** 551709706-0003

Sample Description: North side of roof/roofing materials-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	25%	75%	None Detected	

Client Sample ID: A-3-Tar **Lab Sample ID:** 551709706-0003A

Sample Description: North side of roof/roofing materials-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	0%	100%	None Detected	

Client Sample ID: A-3-Insulation **Lab Sample ID:** 551709706-0003B

Sample Description: North side of roof/roofing materials-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	100%	None Detected	



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<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551709706
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-3-foam **Lab Sample ID:** 551709706-0003C

Sample Description: North side of roof/roofing materials-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Yellow	0%	100%	None Detected	

Client Sample ID: A-4-Floor Tile **Lab Sample ID:** 551709706-0004

Sample Description: Third Floor Mechanical Room washroom/(12" x 12") white vinyl floor tile and mastic -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	White	0.0%	100%	None Detected	
TEM Grav. Reduction	9/05/2017	White	0.0%	100%	None Detected	

Client Sample ID: A-4-Mastic **Lab Sample ID:** 551709706-0004A

Sample Description: Third Floor Mechanical Room washroom/(12" x 12") white vinyl floor tile and mastic -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	100%	None Detected	

Client Sample ID: A-16-Floor Tile **Lab Sample ID:** 551709706-0005

Sample Description: L454/(12" x 12") white vinyl floor tile and mastic -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-16-Mastic **Lab Sample ID:** 551709706-0005A

Sample Description: L454/(12" x 12") white vinyl floor tile and mastic -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	0%	100%	None Detected	

Client Sample ID: A-36-Floor Tile **Lab Sample ID:** 551709706-0006

Sample Description: L662/(12" x 12") white vinyl floor tile and mastic -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-36-Mastic **Lab Sample ID:** 551709706-0006A

Sample Description: L662/(12" x 12") white vinyl floor tile and mastic -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	0%	100%	None Detected	

Client Sample ID: A-11-Floor Tile **Lab Sample ID:** 551709706-0007

Sample Description: Corridor at L460/(12" x 12") grey vinyl floor tile and mastic-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	White	0.0%	93.7%	6.3% Chrysotile	
TEM Grav. Reduction	9/05/2017		Positive Stop (Not Analyzed)			



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<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551709706
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-11-Mastic **Lab Sample ID:** 551709706-0007A

Sample Description: Corridor at L460/(12" x 12") grey vinyl floor tile and mastic-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Black	0%	100%	None Detected	

Client Sample ID: A-26 **Lab Sample ID:** 551709706-0008

Sample Description: L504/(12" x 12") grey vinyl floor tile and mastic-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017		Positive Stop (Not Analyzed)			

Client Sample ID: A-15-Floor Tile **Lab Sample ID:** 551709706-0009

Sample Description: L401/green vinyl sheet flooring and levelling compound -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	Green	0.0%	100%	None Detected	
TEM Grav. Reduction	9/05/2017	Green	0.0%	100%	None Detected	

Client Sample ID: A-15-Floor Tile 2 **Lab Sample ID:** 551709706-0009A

Sample Description: L401/green vinyl sheet flooring and levelling compound -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	Gray	0.0%	99.7%	0.29% Chrysotile	
TEM Grav. Reduction	9/05/2017	Gray	0.0%	99.3%	0.73% Chrysotile	

Client Sample ID: A-61-Vinyl Sheet Flooring **Lab Sample ID:** 551709706-0010

Sample Description: L401/green vinyl sheet flooring and levelling compound -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017		Positive Stop (Not Analyzed)			

Client Sample ID: A-61-Vinyl Floor Tile **Lab Sample ID:** 551709706-0010A

Sample Description: L401/green vinyl sheet flooring and levelling compound -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017		Positive Stop (Not Analyzed)			

Client Sample ID: A-62 **Lab Sample ID:** 551709706-0011

Sample Description: L401/green vinyl sheet flooring and levelling compound -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017		Positive Stop (Not Analyzed)			

Client Sample ID: A-56-Vinyl Sheet Flooring **Lab Sample ID:** 551709706-0012

Sample Description: L730/diamond vinyl sheet flooring with paper backing

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
TEM Grav. Reduction	9/05/2017		Positive Stop (Not Analyzed)			



EMSL Canada Inc.

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<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 551709706
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-56-Backing **Lab Sample ID:** 551709706-0012A

Sample Description: L730/diamond vinyl sheet flooring with paper backing

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Tan	0%	55%	45% Chrysotile	
TEM Grav. Reduction	9/05/2017				Insufficient Material	

Client Sample ID: A-18-Vinyl Sheet Flooring/backing **Lab Sample ID:** 551709706-0013

Sample Description: L414/vinyl sheet flooring and backing -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	White	0.0%	100%	None Detected	Result includes a small amount of inseparable attached material
TEM Grav. Reduction	9/05/2017	White	0.0%	100%	None Detected	

Client Sample ID: A-31-Vinyl Sheet Flooring **Lab Sample ID:** 551709706-0014

Sample Description: L525/vinyl sheet flooring and backing -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-31-Backing **Lab Sample ID:** 551709706-0014A

Sample Description: L525/vinyl sheet flooring and backing -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-32-Vinyl Sheet Flooring **Lab Sample ID:** 551709706-0015

Sample Description: L525/vinyl sheet flooring and backing -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-32-Backing **Lab Sample ID:** 551709706-0015A

Sample Description: L525/vinyl sheet flooring and backing -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-33-Vinyl Sheet Flooring **Lab Sample ID:** 551709706-0016

Sample Description: L533/vinyl sheet flooring and backing -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	Pink	0.0%	100%	None Detected	
TEM Grav. Reduction	9/05/2017	Pink	0.0%	100%	None Detected	



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EMSL Canada Order 551709706
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-33-Backing **Lab Sample ID:** 551709706-0016A

Sample Description: L533/vinyl sheet flooring and backing -1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Tan	80%	20%	None Detected	

Client Sample ID: A-34 **Lab Sample ID:** 551709706-0017

Sample Description: L533/vinyl sheet flooring and backing -2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Beige	5%	95%	None Detected	

Client Sample ID: A-35 **Lab Sample ID:** 551709706-0018

Sample Description: L533/vinyl sheet flooring and backing -3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Beige	5%	95%	None Detected	

Client Sample ID: A-6 **Lab Sample ID:** 551709706-0019

Sample Description: A&L Mechanical Room/hanger insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	50%	50% Chrysotile	

Client Sample ID: A-25 **Lab Sample ID:** 551709706-0020

Sample Description: L517/condensate pipe straight insulation

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	60%	40% Chrysotile	

Client Sample ID: A-17 **Lab Sample ID:** 551709706-0021

Sample Description: L446/cement board in fumehood storage

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	70%	30% Chrysotile	

Client Sample ID: A-38 **Lab Sample ID:** 551709706-0022

Sample Description: L668/black counter top-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	9/05/2017	Black	0.0%	90.9%	9.1% Chrysotile	
TEM Grav. Reduction	9/05/2017		Positive Stop (Not Analyzed)			

Client Sample ID: A-39 **Lab Sample ID:** 551709706-0023

Sample Description: L674/black counter top-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017		Positive Stop (Not Analyzed)			



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Client Sample ID: A-55 **Lab Sample ID:** 551709706-0024
Sample Description: L747/black counter top-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017					Positive Stop (Not Analyzed)

Client Sample ID: A-46 **Lab Sample ID:** 551709706-0025
Sample Description: L504/vinyl baseboard mastic-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Yellow	0%	100%	None Detected	

Client Sample ID: A-47 **Lab Sample ID:** 551709706-0026
Sample Description: L472/vinyl baseboard mastic-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	100%	None Detected	

Client Sample ID: A-48 **Lab Sample ID:** 551709706-0027
Sample Description: Corridor at L452B/vinyl baseboard mastic-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	100%	None Detected	

Client Sample ID: A-27 **Lab Sample ID:** 551709706-0028
Sample Description: L525/(2' x 4') ceiling tile-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	80%	20%	None Detected	

Client Sample ID: A-28 **Lab Sample ID:** 551709706-0029
Sample Description: L525/(2' x 4') ceiling tile-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	80%	20%	None Detected	

Client Sample ID: A-29 **Lab Sample ID:** 551709706-0030
Sample Description: L525/(2' x 4') ceiling tile-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	80%	20%	None Detected	

Client Sample ID: A-44 **Lab Sample ID:** 551709706-0031
Sample Description: Corridor at NW6 stairwell/(2' x 4') typical ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	80%	20%	None Detected	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-41 **Lab Sample ID:** 551709706-0032
Sample Description: L625/white sink coating-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Beige	0%	100%	None Detected	

Client Sample ID: A-42 **Lab Sample ID:** 551709706-0033
Sample Description: L646/white sink coating-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Beige	0%	100%	None Detected	

Client Sample ID: A-45 **Lab Sample ID:** 551709706-0034
Sample Description: L572/white sink coating-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Beige	0%	100%	None Detected	

Client Sample ID: A-13 **Lab Sample ID:** 551709706-0035
Sample Description: L436/masonry mortar-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-23 **Lab Sample ID:** 551709706-0036
Sample Description: L556/masonry mortar-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-40 **Lab Sample ID:** 551709706-0037
Sample Description: L636/masonry mortar-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-7 **Lab Sample ID:** 551709706-0038
Sample Description: L420/grey column caulking-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	98%	2% Chrysotile	

Client Sample ID: A-20 **Lab Sample ID:** 551709706-0039
Sample Description: L558/grey column caulking-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017					Positive Stop (Not Analyzed)



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Client Sample ID: A-50 **Lab Sample ID:** 551709706-0040
Sample Description: L755/grey column caulking-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017					Positive Stop (Not Analyzed)

Client Sample ID: A-8 **Lab Sample ID:** 551709706-0041
Sample Description: L420/grey glass caulking-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-19 **Lab Sample ID:** 551709706-0042
Sample Description: L558/grey glass caulking-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-64 **Lab Sample ID:** 551709706-0043
Sample Description: L457/grey glass caulking-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-9 **Lab Sample ID:** 551709706-0044
Sample Description: L420/grey pipe caulking-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-21 **Lab Sample ID:** 551709706-0045
Sample Description: L558/grey pipe caulking-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-51 **Lab Sample ID:** 551709706-0046
Sample Description: L755/grey pipe caulking-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-22 **Lab Sample ID:** 551709706-0047
Sample Description: L558/cement exhaust pipe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray/Blue	0%	70%	25% Chrysotile 5% Crocidolite	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-12 **Lab Sample ID:** 551709706-0048
Sample Description: Corridor Freight Elevator/drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
400 PLM Pt Ct	9/05/2017	Tan	0%	99.50%	0.50% Chrysotile	

Client Sample ID: A-57 **Lab Sample ID:** 551709706-0049
Sample Description: L730/drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-49 **Lab Sample ID:** 551709706-0050
Sample Description: L755/grey duct seal-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray/Silver	0%	100%	None Detected	

Client Sample ID: A-59 **Lab Sample ID:** 551709706-0051
Sample Description: L621/grey duct seal-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray/Silver	0%	100%	None Detected	

Client Sample ID: A-60 **Lab Sample ID:** 551709706-0052
Sample Description: L420/grey duct seal-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray/Silver	0%	100%	None Detected	

Client Sample ID: A-52 **Lab Sample ID:** 551709706-0053
Sample Description: Corridor at L759A/brown duct seal-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	100%	None Detected	

Client Sample ID: A-58 **Lab Sample ID:** 551709706-0054
Sample Description: Corridor at L635A/brown duct seal-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Brown	0%	98%	2% Chrysotile	

Client Sample ID: A-63-duct seal **Lab Sample ID:** 551709706-0055
Sample Description: L549/brown duct seal-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017					Positive Stop (Not Analyzed)



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-63-Wrap **Lab Sample ID:** 551709706-0055A
Sample Description: L549/brown duct seal-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Silver	45%	55%	None Detected	

Client Sample ID: A-5-Skim Coat **Lab Sample ID:** 551709706-0056
Sample Description: Third Floor Mechanical Room, Rondar office/rough wall plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-5-Rough Coat **Lab Sample ID:** 551709706-0056A
Sample Description: Third Floor Mechanical Room, Rondar office/rough wall plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-14-Skim Coat **Lab Sample ID:** 551709706-0057
Sample Description: L438/smooth ceiling plaster (finish and base coats)-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-14-Rough Coat **Lab Sample ID:** 551709706-0057A
Sample Description: L438/smooth ceiling plaster (finish and base coats)-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-24-Skim Coat **Lab Sample ID:** 551709706-0058
Sample Description: L556/smooth ceiling plaster (finish and base coats)-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	

Client Sample ID: A-24-Rough Coat **Lab Sample ID:** 551709706-0058A
Sample Description: L556/smooth ceiling plaster (finish and base coats)-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-43-Skim Coat **Lab Sample ID:** 551709706-0059
Sample Description: Corridor at NW6 stairwell/smooth wall plaster (finish and base coats)-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	White	0%	100%	None Detected	



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Client Sample ID: A-43-Rough Coat **Lab Sample ID:** 551709706-0059A

Sample Description: Corridor at NW6 stairwell/smooth wall plaster (finish and base coats)-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-53 **Lab Sample ID:** 551709706-0060

Sample Description: L756/smooth ceiling plaster (finish and base coats)-4

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	9/05/2017	Gray/White	0%	100%	None Detected	

Analyst(s):

- Matthew Davis PLM (46)
400 PLM Pt Ct (1)
PLM Grav. Reduction (8)
TEM Grav. Reduction (6)
- Shorthri Kalikutty PLM (15)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. 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. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 09/05/2017 12:47:34



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Customer PO: CCIW
Project ID:

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Collected:
Received: 10/17/2017
Analyzed: 10/18/2017

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-65 **Lab Sample ID:** 551711389-0001

Sample Description: Corridor at L146 - (12" x 12") vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	10/18/2017	Beige	0.0%	100%	None Detected	
TEM Grav. Reduction	10/18/2017	Beige	0.0%	100%	None Detected	

Client Sample ID: A-65 **Lab Sample ID:** 551711389-0002

Sample Description: Room L150- (12" x 12") vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Beige	0%	100%	None Detected	

Client Sample ID: A-67 **Lab Sample ID:** 551711389-0003

Sample Description: Room L145A- textured ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	7%	93%	None Detected	

Client Sample ID: A-68 **Lab Sample ID:** 551711389-0004

Sample Description: Room L145- textured coat on ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White/Beige	10%	90%	None Detected	

Client Sample ID: A-69 **Lab Sample ID:** 551711389-0005

Sample Description: Room L112A- parging on wall-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-70 **Lab Sample ID:** 551711389-0006

Sample Description: Room L112A- parging on wall-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-71 **Lab Sample ID:** 551711389-0007

Sample Description: Room L112A- parging on wall-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-78 **Lab Sample ID:** 551711389-0008
Sample Description: Mall Area- ceiling texture coat-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-79 **Lab Sample ID:** 551711389-0009
Sample Description: Mall Area- ceiling texture coat-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-80 **Lab Sample ID:** 551711389-0010
Sample Description: Mall Area- ceiling texture coat-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-81 **Lab Sample ID:** 551711389-0011
Sample Description: Mall Area- ceiling texture coat-4

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-82 **Lab Sample ID:** 551711389-0012
Sample Description: Mall Area- ceiling texture coat-5

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-83 **Lab Sample ID:** 551711389-0013
Sample Description: Mall Area- ceiling texture coat-6

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	6%	94%	None Detected	

Client Sample ID: A-84 **Lab Sample ID:** 551711389-0014
Sample Description: Mall Area- ceiling texture coat-7

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	4%	96%	None Detected	

Client Sample ID: A-72 **Lab Sample ID:** 551711389-0015
Sample Description: Room W107- drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	4%	96%	None Detected	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-73

Lab Sample ID: 551711389-0016

Sample Description: Room 224B-(2' x 4') ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-74-Finish Coat

Lab Sample ID: 551711389-0017

Sample Description: RoomW220- smooth plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-74-Rough Coat

Lab Sample ID: 551711389-0017A

Sample Description: RoomW220- smooth plaster

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-75

Lab Sample ID: 551711389-0018

Sample Description: Corridor at Room W238- fireproofing

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	30%	70%	None Detected	

Client Sample ID: A-76

Lab Sample ID: 551711389-0019

Sample Description: RoomW249- drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-77

Lab Sample ID: 551711389-0020

Sample Description: Corridor-(12" x 12") vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
TEM Grav. Reduction	10/18/2017	Beige	0.0%	100%	None Detected	

Client Sample ID: A-77

Lab Sample ID: 551711389-0021

Sample Description: Room 227- drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-78

Lab Sample ID: 551711389-0022

Sample Description: Boiler Plant- (12" x 12") vinyl floor tile-grey with grey flecks-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	10/18/2017	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	10/18/2017	Gray	0.0%	100%	None Detected	



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EMSL Canada Order 551711389
Customer ID: 55DCSL97
Customer PO: CCIW
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-79 **Lab Sample ID:** 551711389-0023
Sample Description: Boiler Plant- (12" x 12") vinyl floor tile-grey with grey flecks-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Brown/Gray	0%	100%	None Detected	

Client Sample ID: A-80 **Lab Sample ID:** 551711389-0024
Sample Description: Boiler Plant- (12" x 12") vinyl floor tile-grey with grey flecks-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-81 **Lab Sample ID:** 551711389-0025
Sample Description: Second floor corridor- (2' x 4') ceiling tile (chicken feet)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-82-Finish Coat **Lab Sample ID:** 551711389-0026
Sample Description: Room S202- plaster (lop and scratch coat)-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-82-Rough Coat **Lab Sample ID:** 551711389-0026A
Sample Description: Room S202- plaster (lop and scratch coat)-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-83-Finish Coat **Lab Sample ID:** 551711389-0027
Sample Description: Room S202- plaster (lop and scratch coat)-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-83-Rough Coat **Lab Sample ID:** 551711389-0027A
Sample Description: Room S202- plaster (lop and scratch coat)-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-85 **Lab Sample ID:** 551711389-0028
Sample Description: Room 8S223- drywall joint compound
Room 8223-

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	



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 Project ID:

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Client Sample ID: A-86 **Lab Sample ID:** 551711389-0029

Sample Description: Room S221- fireproofing
Room 8223-

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	75%	25%	None Detected	

Client Sample ID: A-87 **Lab Sample ID:** 551711389-0030

Sample Description: Room S221- (2' x 4') ceiling tile
Room 8223-

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-88 **Lab Sample ID:** 551711389-0031

Sample Description: Second floor corridor - vinyl sheet flooring-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	10/18/2017	Green	0.27%	99.7%	None Detected	
TEM Grav. Reduction	10/18/2017	Green	0.0%	100%	None Detected	

Client Sample ID: A-92 **Lab Sample ID:** 551711389-0032

Sample Description: Room S111-vinyl sheet flooring-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Blue	5%	95%	None Detected	

Client Sample ID: A-94 **Lab Sample ID:** 551711389-0033

Sample Description: Second floor corridor - vinyl sheet flooring-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Blue	5%	95%	None Detected	

Client Sample ID: A-90 **Lab Sample ID:** 551711389-0034

Sample Description: Room S211 -white sink coating-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-91 **Lab Sample ID:** 551711389-0035

Sample Description: RoomS209 -white sink coating-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-93 **Lab Sample ID:** 551711389-0036

Sample Description: RoomS106- white sink coating-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-107 **Lab Sample ID:** 551711389-0037
Sample Description: Room S130 - fireproofing-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	70%	30%	None Detected	

Client Sample ID: A-108 **Lab Sample ID:** 551711389-0038
Sample Description: Room S131 - fireproofing-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	70%	30%	None Detected	

Client Sample ID: A-109 **Lab Sample ID:** 551711389-0039
Sample Description: Room S134 - fireproofing-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	70%	30%	None Detected	

Client Sample ID: A-117 **Lab Sample ID:** 551711389-0040
Sample Description: Room S152 - fireproofing-4

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	80%	20%	None Detected	

Client Sample ID: A-118 **Lab Sample ID:** 551711389-0041
Sample Description: Room S223 - fireproofing-5

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	85%	15%	None Detected	

Client Sample ID: A-110 **Lab Sample ID:** 551711389-0042
Sample Description: Room S142- (12" x 12") vinyl floor tile-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	10/18/2017	White	0.0%	100%	None Detected	
TEM Grav. Reduction	10/18/2017	White	0.0%	100%	None Detected	

Client Sample ID: A-111 **Lab Sample ID:** 551711389-0043
Sample Description: Room S142- (12" x 12") vinyl floor tile-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Client Sample ID: A-112 **Lab Sample ID:** 551711389-0044
Sample Description: Room S142- (12" x 12") vinyl floor tile-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White/Black	0%	100%	None Detected	



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Client Sample ID: A-113 **Lab Sample ID:** 551711389-0045
Sample Description: Room S142-(2' x 4') ceiling tile-1

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-114 **Lab Sample ID:** 551711389-0046
Sample Description: Room S114-(2' x 4') ceiling tile-2

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-116 **Lab Sample ID:** 551711389-0047
Sample Description: Room S223-(2' x 4') ceiling tile-3

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-115 **Lab Sample ID:** 551711389-0048
Sample Description: Room S142 - drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-95 **Lab Sample ID:** 551711389-0049
Sample Description: First floor corridor-drywall joint compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	White	0%	100%	None Detected	

Client Sample ID: A-96 **Lab Sample ID:** 551711389-0050
Sample Description: First floor corridor-(12" x 12") vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	10/18/2017	White	0.0%	100%	None Detected	
TEM Grav. Reduction	10/18/2017	White	0.0%	100%	None Detected	

Client Sample ID: A-100 **Lab Sample ID:** 551711389-0051
Sample Description: Room C114- (12" x 12") vinyl floor tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Beige	0%	100%	None Detected	

Client Sample ID: A-97 **Lab Sample ID:** 551711389-0052
Sample Description: Second floor corridor- (2' x 4') ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	



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Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A-98 **Lab Sample ID:** 551711389-0053
Sample Description: Room C211-(2' x 4') ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray/White	80%	20%	None Detected	

Client Sample ID: A-99 **Lab Sample ID:** 551711389-0054
Sample Description: Room C104-(2' x 4') ceiling tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	10/18/2017	Gray	0%	100%	None Detected	

Analyst(s):

- Ioana Taina PLM (41)
- Jon Delos Santos TEM Grav. Reduction (6)
- Natalie D'Amico PLM (10)
PLM Grav. Reduction (5)

Reviewed and approved by:

Matthew Davis
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Initial report from: 10/18/2017 11:42



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EMSL Canada Order 551712696
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Attn: Paul Smith Phone: (905) 882-5984
ARCADIS Canada Inc. Fax: (905) 882-8962
121 Granton Drive Collected:
Unit 12 Received: 11/15/2017
Richmond Hill, ON L4B 3N4 Analyzed: 11/17/2017
Proj: 702345-009 CCIW

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: W249-1 **Lab Sample ID:** 551712696-0001

Sample Description: Room W249 - Beige Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/16/2017	Beige	0.0%	100%	None Detected	

Client Sample ID: W249-2 **Lab Sample ID:** 551712696-0002

Sample Description: Room W249 - Beige Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/16/2017	Beige	0.0%	100%	None Detected	

Client Sample ID: W249-3 **Lab Sample ID:** 551712696-0003

Sample Description: Room W249 - Beige Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/17/2017	Beige	0.0%	100%	None Detected	

Client Sample ID: W248-4 **Lab Sample ID:** 551712696-0004

Sample Description: Room W248 - Brown Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/16/2017	Brown	0.0%	100%	None Detected	

Client Sample ID: W249-5 **Lab Sample ID:** 551712696-0005

Sample Description: Room W249 - Brown Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/16/2017	Brown	0.0%	100%	None Detected	

Client Sample ID: W247-6 **Lab Sample ID:** 551712696-0006

Sample Description: Room W247 - Brown Floor Coating

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	11/17/2017	Brown	0.0%	100%	None Detected	

Client Sample ID: 248-TP-1 **Lab Sample ID:** 551712696-0007

Sample Description: Room W248 - Textured Wall Paint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	White	0%	100%	None Detected	



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Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 247-TP-2 **Lab Sample ID:** 551712696-0008
Sample Description: Room W247 - Textured Wall Paint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	White	0%	100%	None Detected	

Client Sample ID: 246B-TP-3 **Lab Sample ID:** 551712696-0009
Sample Description: Room W246B - Textured Wall Paint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2017	Gray	0%	100%	None Detected	

Client Sample ID: 249-CT-1 **Lab Sample ID:** 551712696-0010
Sample Description: Room W249 - (2'x4') Ceiling Tile

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	Gray	80%	20%	None Detected	

Client Sample ID: 248-PL-1 **Lab Sample ID:** 551712696-0011
Sample Description: Room W248 - Ceiling Plaster (Finish/Base coats)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	Gray/White	0%	100%	None Detected	Inseparable layers

Client Sample ID: 246B-PL-2 **Lab Sample ID:** 551712696-0012
Sample Description: Room W246B - Ceiling Plaster (Finish/Base coats)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	Gray/White	0%	100%	None Detected	Inseparable layers

Client Sample ID: 248-PL-3 **Lab Sample ID:** 551712696-0013
Sample Description: Room W248 - Ceiling Plaster (Finish/Base coats)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2017	Gray/White	0%	100%	None Detected	Inseparable layers

Client Sample ID: 231A-JC-1 **Lab Sample ID:** 551712696-0014
Sample Description: Room L231A - Drywall Joint Compound

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/16/2017	White	0%	100%	None Detected	

Client Sample ID: 102-DW-1 **Lab Sample ID:** 551712696-0015
Sample Description: Rppm L102 - Drywall

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	11/17/2017	Gray	3%	97%	None Detected	



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Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

**Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via
EPA600/R-93/116 Method**

Analyst(s):

Anne Balayboa PLM (6)
PLM Grav. Reduction (4)
Natalie D'Amico PLM (3)
PLM Grav. Reduction (2)

Reviewed and approved by:

Matthew Davis
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Report amended: 11/17/2017 13:37:46 Replaces amended report from: 11/17/2017 10:57:48 Reason Code: Client-Change to Sample ID



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EMSL Canada Order # 551712849
Customer ID: 55DCSL97
Customer PO: CCd
Project ID:

Attn: Paul Smith
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Proj: CCd

Phone: (905) 882-5984
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Collectej :
Receivej : 11/20/2017
Analyzej : 11/21/2017

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 102-DI -2
Sample Description: j rywall

Lab Sample ID: 5517128D9-0001

TEST	Analy4ed Date	Color	Fon-Asbestos		Asbestos	Coz z ent
			mibrous	Fon-mibrous		
PLM	11/21/2017	Gray	3%	97%	None Detectej	

Client Sample ID: 102-DI -3
Sample Description: j rywall

Lab Sample ID: 5517128D9-0002

TEST	Analy4ed Date	Color	Fon-Asbestos		Asbestos	Coz z ent
			mibrous	Fon-mibrous		
PLM	11/21/2017	Gray	4%	96%	None Detectej	

Client Sample ID: 102-fC-1
Sample Description: j rywall Wnt compounj

Lab Sample ID: 5517128D9-0003

TEST	Analy4ed Date	Color	Fon-Asbestos		Asbestos	Coz z ent
			mibrous	Fon-mibrous		
PLM	11/21/2017	White	0%	100%	None Detectej	

Analyst(s):

Natalie D'Amico PLM (3)

Reviewed and approved by:

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Initial report nom: 11/22/2017 09:05:53



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EMSL Canada Order 551801676
Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

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ARCADIS Canada Inc. Fax: (905) 882-8962
121 Granton Drive Collected:
Unit 12 Received: 2/12/2018
Richmond Hill, ON L4B 3N4 Analyzed: 2/16/2018
Proj: 702345-007/CCIW

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1A-Shingle **Lab Sample ID:** 551801676-0001

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray/Black	35%	65%	None Detected	

Client Sample ID: 1A-Fiber board **Lab Sample ID:** 551801676-0001A

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Brown	90%	10%	None Detected	

Client Sample ID: 1A-Iso **Lab Sample ID:** 551801676-0001B

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	

Client Sample ID: 1A-Tar Felt **Lab Sample ID:** 551801676-0001C

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	35%	65%	None Detected	

Client Sample ID: 1A-Concrete **Lab Sample ID:** 551801676-0001D

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray	0%	100%	None Detected	

Client Sample ID: 1B-Shingle **Lab Sample ID:** 551801676-0002

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray/Black	35%	65%	None Detected	

Client Sample ID: 1B-Tar **Lab Sample ID:** 551801676-0002A

Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	



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EMSL Canada Order 551801676
Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 1B-Iso **Lab Sample ID:** 551801676-0002B
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	

Client Sample ID: 1B-Fibre Board **Lab Sample ID:** 551801676-0002C
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Tan	90%	10%	None Detected	

Client Sample ID: 1C-Shingle **Lab Sample ID:** 551801676-0003
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	35%	65%	None Detected	

Client Sample ID: 1C-Tar **Lab Sample ID:** 551801676-0003A
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 1C-Felt **Lab Sample ID:** 551801676-0003B
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	45%	55%	None Detected	

Client Sample ID: 1C-Iso **Lab Sample ID:** 551801676-0003C
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	

Client Sample ID: 1C-Fibre Board **Lab Sample ID:** 551801676-0003D
Sample Description: Roofing Material, Northeast Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Tan	90%	10%	None Detected	

Client Sample ID: 2A-Shingle **Lab Sample ID:** 551801676-0004
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray/Black	35%	65%	None Detected	



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EMSL Canada Order 551801676
Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 2A-Cover Board **Lab Sample ID:** 551801676-0004A
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Brown	25%	75%	None Detected	

Client Sample ID: 2A-Iso **Lab Sample ID:** 551801676-0004B
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	

Client Sample ID: 2A-Tar Felt **Lab Sample ID:** 551801676-0004C
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	35%	65%	None Detected	

Client Sample ID: 2A-Tar **Lab Sample ID:** 551801676-0004D
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 2B-Shingle **Lab Sample ID:** 551801676-0005
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	35%	65%	None Detected	

Client Sample ID: 2B-Tar Felt **Lab Sample ID:** 551801676-0005A
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	35%	65%	None Detected	

Client Sample ID: 2B-Cover Board **Lab Sample ID:** 551801676-0005B
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Brown/Gray	25%	75%	None Detected	

Client Sample ID: 2B-Iso **Lab Sample ID:** 551801676-0005C
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	



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EMSL Canada Order 551801676
Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 2C-Shingle **Lab Sample ID:** 551801676-0006
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	25%	75%	None Detected	

Client Sample ID: 2C-Tar Felt **Lab Sample ID:** 551801676-0006A
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	30%	70%	None Detected	

Client Sample ID: 2C-Tar **Lab Sample ID:** 551801676-0006B
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 2C-Cover Board **Lab Sample ID:** 551801676-0006C
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Brown/Gray	35%	65%	None Detected	

Client Sample ID: 2C-Iso **Lab Sample ID:** 551801676-0006D
Sample Description: Roofing Material, Northwest Section

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Yellow	0%	100%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 551801676-0007
Sample Description: Tar on Metal Exhaust Duct

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	10%	90%	None Detected	

Client Sample ID: 3B **Lab Sample ID:** 551801676-0008
Sample Description: Tar on Metal Exhaust Duct

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	20%	80%	None Detected	

Client Sample ID: 3C **Lab Sample ID:** 551801676-0009
Sample Description: Tar on Metal Exhaust Duct

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	20%	80%	None Detected	



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Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: 4A **Lab Sample ID:** 551801676-0010
Sample Description: Caulking on Metal Flashing Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 551801676-0011
Sample Description: Caulking on Metal Flashing Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 551801676-0012
Sample Description: Caulking on Metal Flashing Black

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Black	0%	100%	None Detected	

Client Sample ID: 5A **Lab Sample ID:** 551801676-0013
Sample Description: Caulking around Chemical Exhaust White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray	0%	100%	None Detected	

Client Sample ID: 5B **Lab Sample ID:** 551801676-0014
Sample Description: Caulking around Chemical Exhaust White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray	0%	100%	None Detected	

Client Sample ID: 5C **Lab Sample ID:** 551801676-0015
Sample Description: Caulking around Chemical Exhaust White

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/16/2018	Gray	0%	100%	None Detected	



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EMSL Canada Order 551801676
Customer ID: 55DCSL97
Customer PO: 702345-007/CCIW
Project ID:

**Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via
EPA600/R-93/116 Method**

Analyst(s):

Matthew Davis PLM (37)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. 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. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 02/16/2018 12:06:45



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EMSL Canada Order 551800152
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Attn: Paul Smith
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4
Proj: 702345-009/CCIW OUT BUILDINGS

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 1/08/2018
Analyzed: 1/15/2018

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A122 **Lab Sample ID:** 551800152-0001

Sample Description: PORTABLE 1 - INTERIOR/VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	1/15/2018	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	1/15/2018	Gray	0.0%	100%	None Detected	

Client Sample ID: A123 **Lab Sample ID:** 551800152-0002

Sample Description: PORTABLE 1 - INTERIOR/VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	0%	100%	None Detected	

Client Sample ID: A124 **Lab Sample ID:** 551800152-0003

Sample Description: PORTABLE 1 - INTERIOR/VINYL SHEET FLOORING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	0%	100%	None Detected	

Client Sample ID: A128 **Lab Sample ID:** 551800152-0004

Sample Description: PORTABLE 2 - INTERIOR/2' X 4' CEILING TILE- PINHOLE RANDOM FISSURE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	80%	20%	None Detected	

Client Sample ID: A129 **Lab Sample ID:** 551800152-0005

Sample Description: PORTABLE 2 - INTERIOR/2' X 4' CEILING TILE- PINHOLE RANDOM FISSURE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	80%	20%	None Detected	

Client Sample ID: A130 **Lab Sample ID:** 551800152-0006

Sample Description: PORTABLE 2 - INTERIOR/2' X 4' CEILING TILE- PINHOLE RANDOM FISSURE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	75%	25%	None Detected	

Client Sample ID: A119 **Lab Sample ID:** 551800152-0007

Sample Description: PORTABLE 2 - EXTERIOR/PARGING ON SIDING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/12/2018	Gray	5%	95%	None Detected	



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EMSL Canada Order 551800152
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A120 **Lab Sample ID:** 551800152-0008
Sample Description: PORTABLE 2 - EXTERIOR/PARGING ON SIDING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	5%	95%	None Detected	

Client Sample ID: A121 **Lab Sample ID:** 551800152-0009
Sample Description: PORTABLE 2 - EXTERIOR/PARGING ON SIDING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	6%	94%	None Detected	

Client Sample ID: A125 **Lab Sample ID:** 551800152-0010
Sample Description: PORTABLE 4 - INTERIOR/2' X 4' CEILING TILE- FISSURE ON 2'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	80%	20%	None Detected	

Client Sample ID: A126 **Lab Sample ID:** 551800152-0011
Sample Description: PORTABLE 4 - INTERIOR/2' X 4' CEILING TILE- FISSURE ON 2'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	80%	20%	None Detected	

Client Sample ID: A127 **Lab Sample ID:** 551800152-0012
Sample Description: PORTABLE 4 - INTERIOR/2' X 4' CEILING TILE- FISSURE ON 2'

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	75%	25%	None Detected	

Client Sample ID: A116 **Lab Sample ID:** 551800152-0013
Sample Description: PORTABLE 5 - INTERIOR/VINYL SHEET FLOORING - GREY WITH WHITE SPECKS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	1/15/2018	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	1/15/2018	Gray	0.0%	100%	None Detected	

Client Sample ID: A117 **Lab Sample ID:** 551800152-0014
Sample Description: PORTABLE 5 - INTERIOR/VINYL SHEET FLOORING - GREY WITH WHITE SPECKS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/12/2018	Gray	2%	98%	None Detected	

Client Sample ID: A118 **Lab Sample ID:** 551800152-0015
Sample Description: PORTABLE 5 - INTERIOR/VINYL SHEET FLOORING - GREY WITH WHITE SPECKS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/12/2018	Gray	2%	98%	None Detected	



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EMSL Canada Order 551800152
Customer ID: 55DCSL97
Customer PO: 702345-009
Project ID:

Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: A131 **Lab Sample ID:** 551800152-0016

Sample Description: PORTABLE 2 - INTERIOR/12"x12" VINYL FLOOR TILE - BLUE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	1/15/2018	Blue	0.0%	100%	None Detected	
TEM Grav. Reduction	1/15/2018	Blue	0.0%	100%	None Detected	

Client Sample ID: A132 **Lab Sample ID:** 551800152-0017

Sample Description: PORTABLE 2 - INTERIOR/12"x12" VINYL FLOOR TILE - BLUE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	0%	100%	None Detected	

Client Sample ID: A133 **Lab Sample ID:** 551800152-0018

Sample Description: PORTABLE 2 - INTERIOR/12"x12" VINYL FLOOR TILE - BLUE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	1/15/2018	Gray	0%	100%	None Detected	

Analyst(s):

- Caroline Allen PLM (12)
- Natalie D'Amico PLM (3)
TEM Grav. Reduction (3)
- Shorthri Kalikutty PLM Grav. Reduction (3)

Reviewed and approved by:

Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. 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. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 01/15/2018 16:34:22



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name:	Superior Group , 867 Lakeshore Road Burlington		
Project No.:	0210258.000		
Prepared For:	S. Shringi / M. Maiorana		
	Date Received:	August 15, 2017	
Lab Reference No.:	Date Analyzed:	August 17, 2017	
Analyst(s):	# Samples submitted:	3	
	# Phases analyzed:	1	

Method of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Ontario, British Columbia, Nova Scotia	0.5%	Manitoba	0.1% friable 1% non-friable
Quebec	0.1%	Saskatchewan	0.5% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Newfoundland and Labrador, PEI and New Brunswick	1%

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested.

NOTE: *This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst. Vinyl asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method. Internal verification studies performed by Pinchin indicate that the chance of missing asbestos in floor tiles is no higher than about 2%. The vinyl tile study and laboratory documentation on measurement uncertainty is available upon request. The analysis of dust samples by PLM cannot be used as an indicator of past or present airborne asbestos fibre levels.*



**Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis**

Project Name: Superior Group , 867 Lakeshore Road Burlington
Project No.: 0210258.000
Prepared For: S. Shringi / M. Maiorana

Lab Reference No.: b175037
Date Analyzed: August 17, 2017

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)		
		ASBESTOS		OTHER
0001A Transite panel, Treatment Room, WTC building	Homogeneous, grey, hard, cementitious transite material.	Chrysotile	10-25%	Non-Fibrous Material > 75%
0001B Transite panel, Treatment Room, WTC building				Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.			
0001C Transite panel, Treatment Room, WTC building				Not Analyzed
Comments:	See Comment for Sample 0001B.			

Reviewed by:

Reporting Analyst:



Analyzed by: W.M
 Reviewed by: [Signature]
 Report Sent by: [Signature]



Special Instructions:

**Pinchin Ltd. - Asbestos Laboratory
 Internal Asbestos Bulk Sample Chain of Custody**

Client Name:	Superior Group	Project Address:	867 Lakeshore Road Burlington
Portfolio/Building No:		Pinchin File:	210258
Submitted by:	Shubham Shringi	Email:	sshringi@pinchin.com
CC Results to:	Micheal Maiorana	CC Email:	mmaiorana@pinchin.com
Invoice to:		Invoice Email:	Micheal Maiorana
Date Submitted:	August 14 2017	Required by:	August 17 2017
# of Samples:	3	Priority:	3 Day Turnaround
Year of Building Construction (Mandatory Field):			
Do NOT Stop on Positive (Sample Numbers):			
Pinchin Group Company (Mandatory Field):			Pinchin

To be Completed by Lab Personnel Only:			
Lab Reference #:	675037	Time:	24 hour clock
Received by:	AUG 15 2017	Date:	Month Day Year
Name(s) of Analyst(s):	W.M./N.B.	August 17, 2017	

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
	0001	A	Transite panel, Treatment Room, WTC building CH 10-257
	0001	B	Transite panel, Treatment Room, WTC building - NA -
	0001	C	Transite panel, Treatment Room, WTC building - NA -

Your Project #: 702345-009
 Site Location: CCIW
 Your C.O.C. #: na

Attention: Paul Smith

ARCADIS Canada Inc
 121 Granton Dr
 Unit 11
 Richmond Hill, ON
 L4B 3N4

Report Date: 2017/09/07
 Report #: R4689761
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7I8288
Received: 2017/08/30, 09:40

Sample Matrix: SOLID
 # Samples Received: 12

Analyses	Date		Laboratory Method	Reference
	Quantity	Date		
Metals in Paint	12	2017/09/05	2017/09/06	CAM SOP-00408 EPA 6010D m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
 Marijane Cruz, Senior Project Manager
 Email: MCruz@maxxam.ca
 Phone# (905)817-5756

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ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		FAP738		FAP739		FAP740		
Sampling Date		2017/08/04		2017/08/04		2017/08/04		
COC Number		na		na		na		
	UNITS	P-1 8THFLOOR MECH .ROOM-WHITE CEILING PAINT	RDL	P-2 8THFLOOR MECH .ROOM-YELLOW PIPE PAINT	RDL	P-3 R&D8THFLOOR MECH .ROOM-BLUE EXHUAUST PAINT	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	1400	10	29000	100	6900	25	5149855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam ID		FAP741		FAP742		FAP743		
Sampling Date		2017/08/04		2017/08/04		2017/08/04		
COC Number		na		na		na		
	UNITS	P4 R&D MECH .ROOM-GREEN DUCT PAINT	RDL	P-5 CORIDOR AT L460-WHITE WALL PAINT	RDL	P-6 L401-BLACK TRIM PAINT	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	150000	500	1100	7.0	21	5.0	5149855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam ID		FAP744	FAP744		FAP745	FAP746		
Sampling Date		2017/08/04	2017/08/04		2017/08/04	2017/08/04		
COC Number		na	na		na	na		
	UNITS	P-7 L444-WHITE WALL PAINT	P-7 L444-WHITE WALL PAINT Lab-Dup	RDL	P-8 L516-WHITE CELIING PAINT	P-9 CORIDOR AT NW6-WHITE WALL PAINT	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	480	470	1.0	160	<10	10	5149855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Maxxam ID		FAP747		FAP748		FAP749		
Sampling Date		2017/08/04		2017/08/04		2017/08/04		
COC Number		na		na		na		
	UNITS	P-10 L756-WHITE CEILING PAINT	RDL	P-11 L754- LIGHT YELLOW WALL PAINT	RDL	P-12 L730-YELLOWISH WALLPAINT	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	31	10	9.3	3.0	8.8	5.0	5149855
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

GENERAL COMMENTS

Sample FAP740 [P-3 R&D8THFLOOR MECH .ROOM-BLUE EXHUAUST PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FAP741 [P4 R&D MECH .ROOM-GREEN DUCT PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FAP742 [P-5 CORIDOR AT L460-WHITE WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FAP743 [P-6 L401-BLACK TRIM PAINT] : Sample is a mix of paint and wood. Analysis performed with client's consent.
Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FAP745 [P-8 L516-WHITE CELIING PAINT] : Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample FAP746 [P-9 CORIDOR AT NW6-WHITE WALL PAINT] : Sample is a piece of concrete/putty. It is not paint by itself, it is mixed in putty. Analysis performed with client's consent.
Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample FAP747 [P-10 L756-WHITE CEILING PAINT] : Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample FAP748 [P-11 L754- LIGHT YELLOW WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FAP749 [P-12 L730-YELLOWISH WALLPAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5149855	Lead (Pb)	2017/09/06	NC (1)	75 - 125	<1.0	mg/kg	2.2 (2)	35	105	75 - 125

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

(1) Matrix Spike Parent ID [FAP744-01]

(2) Duplicate Parent ID [FAP744-01]

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Maxxam Analytics 6740 Campobello Road Mississauga, ON L5N 2L8
 Phone: 905-817-5700 Fax: 905-817-5778 Toll Free: (800) 563-6266

Invoice Information:
 Company Name: ARCADIS Canada Inc.
 Contact Name: Paul Smith
 Address: 121 Graniton Drive, Suite 12
 Richmond Hill, Ontario L4B 3N4
 Phone: 905.882.5954 Fax: 905.882.8962
 Email: Paul.Smith@arcadis-canada.com

REPORT INFORMATION (if differs from invoice):
 Quotation #: 702345-009
 P.O. #: CCLW
 Project #: CCLW
 Project Name:
 Location:
 Sampled By:

MAXXAM JOB NUMBER:
 CHAIN OF CUSTODY #:

REGULATORY CRITERIA
 Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

MISA
 WOOD
 Reg. 153
 Table 1 Residential / Parkland
 Table 2 Industrial / Commercial
 Table 3 Medium / Fine
 Table 6 Coarse
 Sewer Use
 Sanitary
 Storm
 Municipality:
 Report Criteria on C of A?

ANALYSIS REQUESTED (Please be specific):

Sample Identification	Date Sampled	Time Sampled	Matrix
P-1			
P-2			
P-3			
P-4			
P-5			
P-6			
P-7			
P-8			
P-9			
P-10			
P-11			
P-12			

Regulated Drinking Water? (Y/N)

Metals Field Filtered? (Y/N)

TURNAROUND TIME (TAT) REQUIRED:
 PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
 Regular (Standard) TAT: 5 to 7 Working Days
 Rush TAT: Rush Confirmation # (call Lab for #)
 1 day 2 days 3 days
 DATE Required: _____
 TIME Required: _____

Please note that TAT for certain tests such as BOD and Dissolved Furans are > 5 days - contact your Project Manager for details.

COMMENTS / TAT COMMENTS

30-Aug-17 09:40
 Marijane Cruz
 B718288
 GKI ENV-1105

JARS USED AND NOT SUBMITTED: Laboratory Use Only Temperature (°C) on Receipt: 20/20/00

Date: 20170830 Time: 09:40

RECEIVED BY: (Signature/Print) P. Smith
 RECEIVED BY: (Signature/Print) MARIJANE CRUZ

MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS



Your P.O. #: 702345-009
Your Project #: CC1W
Your C.O.C. #: na

Attention: Paul Smith

ARCADIS Canada Inc
121 Granton Dr
Unit 11
Richmond Hill, ON
L4B 3N4

Report Date: 2017/10/23
Report #: R4799130
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7M9911
Received: 2017/10/17, 17:35

Sample Matrix: Paint
Samples Received: 10

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Metals in Paint	4	2017/10/20	2017/10/20	CAM SOP-00408	EPA 6010D m
Metals in Paint	6	2017/10/20	2017/10/23	CAM SOP-00408	EPA 6010D m

Remarks:
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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Marijane Cruz, Senior Project Manager
Email: MCruz@maxxam.ca
Phone# (905)817-5756
=====

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ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		FIT132	FIT133	FIT134	FIT135		
Sampling Date		2017/09/07	2017/09/12	2017/09/20	2017/09/20		
COC Number		na	na	na	na		
	UNITS	P-12 A+L=CORRIDOR AT L101-WHITE CEILING PAINT	P-13 R+D=ROOM R272-WHITE PAINT ON COLUMN	P-14 W+W=ROOM R208-YELLOW WALL, CEILING PAINT	P-15 W+W=W209-WHITE WALL PAINT	RDL	QC Batch

Metals							
Lead (Pb)	mg/kg	1400	2100	1400	3300	10	5222104
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam ID		FIT136	FIT137		FIT138		
Sampling Date		2017/09/20	2017/10/05		2017/10/05		
COC Number		na	na		na		
	UNITS	P-16 BOILER PLANT=GREY FLOOR PAINT	P-17 WTC=2ND FLOOR WINDOW-WHITE PAINT ON BLOCK	RDL	P-18 WTC=S246-WHITE PAINT	RDL	QC Batch

Metals							
Lead (Pb)	mg/kg	800	1500	10	800	1.0	5222104
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam ID		FIT139	FIT139		FIT140	FIT141		
Sampling Date		2017/10/05	2017/10/05		2017/10/05	2017/10/06		
COC Number		na	na		na	na		
	UNITS	P-19 WTC=S216-WHITE PAINT ON CONCRETE BLOCK	P-19 WTC=S216-WHITE PAINT ON CONCRETE BLOCK Lab-Dup	RDL	P-20 WTC=S109-GREY PAINT ON CONCRETE	P-21 WTC ANNEX=C113-GREY PAINT ON DRYWALL	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	2600	2600	10	770	3.9	1.0	5222104
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

GENERAL COMMENTS

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5222104	Lead (Pb)	2017/10/23	NC (1)	75 - 125	<1.0	mg/kg	0.97 (2)	35	109	75 - 125

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

(1) Matrix Spike Parent ID [FIT139-01]

(2) Duplicate Parent ID [FIT139-01]

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Brad Newman, Scientific Service Specialist

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INVOICE INFORMATION:
 Company Name: ARCADIS Canada Inc.
 Contact Name: Paul Smith
 Address: 121 Granston Drive, Suite 12
 Richmond Hill, Ontario L4B 3N4
 Phone: 905 882 8964 Fax: 905 882 8962
 Email: Paul.Smith@arcadis-canada.com

REPORT INFORMATION (if differs from invoice):
 Company Name:
 Contact Name:
 Address:
 Phone:
 Email:

PROJECT INFORMATION:
 Quotation #: 17-Oct-17 17:35
 P.O. #: 702335-009
 Project #: CCIW
 Project Name: Marijane Cruz
 Location: B7M9911
 MAF ENV-1113
 Sampled By:

REGULATORY CRITERIA
 Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

MISA Reg. 153 Sewer Use
 PWOO Residential / Parkland Sanitary
 Reg. 558 Industrial / Commercial Storm
 Coarse Medium / Fine Municipality

Report Criteria on C of A?

Other (specify):

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Identification	Date		Time		Matrix	Comments
	Sampled	Received	Sampled	Received		
P-12 A+L Corridor - L101 - white ceiling paint						
P-13 R+D = Room R272 - white paint in column						
P-14 W+W = Room W203 - yellow ceiling paint						
P-15 W+W = W209 - white wall paint						
P-16 Boiler Plant = grey floor paint						
P-17 WTC = 2nd floor Corridor - white paint on inside						
P-18 WTC = S246 - white paint						
P-19 WTC = S216 - white paint on outside of side						
P-20 WTC = S109 - grey paint on concrete						
P-21 WTC Annex = G113 - grey paint on concrete						

ANALYSIS REQUESTED (Please be specific):

Metals Field Filtered? (Y/N) Y N

Regulated Drinking Water? (Y/N) Y N

TURNAROUND TIME (TAT) REQUIRED:
 PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
 Regular (Standard) TAT: 7 Working Days
 RUSH TAT: Rush Confirmation # (call Lab for #)
 1 day 2 days 3 days
 DATE Required:
 TIME Required:
 Please note that TAT for certain tests such as BTEX, PCBs, Dioxin/Furans etc. > 5 days - contact your Project Manager for details.

COMMENTS / TAT COMMENTS

of Cont.
 # JARS USED AND NOT SUBMITTED
 Laboratory Use Only Temperature (°C) on Receipt: 22/22/22

RECEIVED BY: (Signature/Print) P. Smith
 RECEIVED BY: (Signature/Print) P. Smith
 Date: 20171017 Time: 17:35

* MANDATORY SECTIONS IN GREY MUST BE FILLED OUT. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

Your Project #: 702345-009
 Site Location: CCIW
 Your C.O.C. #: na

Attention: Paul Smith

ARCADIS Canada Inc
 121 Granton Dr
 Unit 12
 Richmond Hill, ON
 L4B 3N4

Report Date: 2017/11/17
 Report #: R4862435
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7P6646
Received: 2017/11/15, 12:49

Sample Matrix: Paint
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Metals in Paint	4	2017/11/16	2017/11/16	CAM SOP-00408	EPA 6010D m

Remarks:

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Encryption Key

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 Marijane Cruz, Senior Project Manager
 Email: MCruz@maxxam.ca
 Phone# (905)817-5756

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ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		FOD087		FOD088		FOD089		
Sampling Date		2017/11/10		2017/11/13		2017/11/13		
COC Number		na		na		na		
	UNITS	249-PAINT-1 ROOM W249, BEIGE FLOOR COATING	RDL	249-PAINT-2 ROOM W249, WHITE WALL PAINT	RDL	247-PAINT-3 ROOM W247, BEIGE CEILING PAINT	RDL	QC Batch

Metals								
Lead (Pb)	mg/kg	<5.0	5.0	2.6	2.0	1.3	1.0	5268270
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam ID		FOD089		FOD090		
Sampling Date		2017/11/13		2017/11/13		
COC Number		na		na		
	UNITS	247-PAINT-3 ROOM W247, BEIGE CEILING PAINT Lab-Dup	RDL	231A-PAINT-1 ROOM L231A, BEIGE WALL PAINT	RDL	QC Batch

Metals						
Lead (Pb)	mg/kg	1.3	1.0	4.8	2.0	5268270
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate						

GENERAL COMMENTS

Sample FOD087 [249-PAINT-1 ROOM W249, BEIGE FLOOR COATING] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FOD088 [249-PAINT-2 ROOM W249, WHITE WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample FOD090 [231A-PAINT-1 ROOM L231A, BEIGE WALL PAINT] : Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5268270	Lead (Pb)	2017/11/16	96 (1)	75 - 125	<1.0	mg/kg	0.42 (2)	35	108	75 - 125

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

(1) Matrix Spike Parent ID [FOD089-01]

(2) Duplicate Parent ID [FOD089-01]

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).




Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



6740 Compendio Road, Mississauga, Ontario L5N 2L8
 Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
 CAM (CD-01191/3)

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information Company Name: <i>Accardi Condo</i> Contact Name: <i>Paul Smith</i> Address: Phone: <i>Paul.smith@accardi.com</i> Email:		Report Information (if differs from invoice) Company Name: Contact Name: Address: Phone: Email:		Project Information (where applicable) Quotation #: <i>702345-009</i> P.O. # / Aff#: <i>CCIW</i> Project #: Site Location: Site #: Sampled By:		Turnaround Time (TAT) Required <input type="checkbox"/> Regular TAT (5-7 days) Most analyses PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS Rush TAT (Surcharges will be applied) <input type="checkbox"/> 1 Day <input checked="" type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days Date Required:	
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY				Analysis Requested			
Regulation 153 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Apr/Other <input type="checkbox"/> PWQO <input type="checkbox"/> Region <input type="checkbox"/> Other (Specify) _____ FOR RSC (PLEASE CIRCLE) Y / N <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)		Other Regulations <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Region <input type="checkbox"/> Other (Specify) _____		# OF CONTAINERS SUBMITTED FIELD FILTERED (CIRCLE) Metals / Hg / CVI BTEX / PHE / PA PHG, FA - FA VOCs REG 153 METALS & INORGANICS REG 153 METALS REG 153 CMMS METALS Hg, Cr, V, ICMS Metals, HWS - B)		LABORATORY USE ONLY CUSTODY SEAL Y / N Present <input type="checkbox"/> Intact <input checked="" type="checkbox"/> COOLER TEMPERATURES N N <i>18/11/17</i> COOLING MEDIA PRESENT: Y / N <input type="checkbox"/> Y <input checked="" type="checkbox"/> N COMMENTS 15-Nov-17 12:49 Marijane Cruz B7P6646 J.L ENV-577 MAXXAM JOB #	
RELINQUISHED BY: (Signature/Print) <i>P.P. / P. Smith</i>		RECEIVED BY: (Signature/Print) <i>Christine C. A. Smith</i>		DATE: (YYYY/MM/DD) <i>2017/11/16</i>		TIME: (HH:MM) <i>18:40</i>	
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)		TIME SAMPLED (HH:MM)		MATRIX	
1 <i>249-paint-1 Room 249, beige floor coating</i>							
2 <i>249-paint-2 Room 249, white wall paint</i>							
3 <i>247-paint-3 Room 247, beige ceiling paint</i>							
4							
5 <i>231A-paint 1 Room 231A, beige wall paint</i>							
6							
7							
8							
9							
10							

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Sporometrics Inc.

219 Dufferin Street, Suite 20C, Toronto, ON M6K 1Y9 - t.416-516-1660 - f.416-516-1670 - www.sporometrics.com

RESULTS OF LABORATORY ANALYSES:

JOB NO. 29111.00

To:	Paul Smith	Date of report:	2017/11/16
Company:	Arcadis Canada Inc.	Date of sampling:	2017/11/15
Client Project:	CCIW	Analyst:	Yaima Arocha-Rosete
Client Address:	121 Granton Drive, Unit 12, Richmond Hill, ON L4B 3N4	Date Received:	2017/11/15

BULK / TAPELIFT / BIOTAPE SAMPLE NO.:	M-1	-	-	-	-	-
Location:	Room W249 - ceiling tile					
Serial #:	N/A					
Expiry date:	N/A					
FUNGAL IDENTIFICATION: ^a	ELEMENTS:	MICROSCOPIC OBSERVATIONS ^b (RATING ^c):				
<i>Aspergillus / Penicillium</i> NOS	mycelia	-				
	spores	tr				
OTHER OBSERVATIONS:						
background rating		3+				
FUNGAL GROWTH INDICATED? ^d :		N				

AIHA LAP, LLC LAB NO: 171117

Samples were received in satisfactory condition and tested in accordance with SOP 5.4.1.1.3. These results relate only to the samples tested.

^a NOS = not otherwise specified.

^b Mounted in lactofuchsin / lactic acid, or other medium as required, with 50-100 fields examined in bright field microscopy at 400x magnification.

^c - = not detected; tr = 10⁰ - 10¹ elements in total; 1+ = 10⁰ - 10¹ elements in each of ~25% fields; 2+ = 10¹ - 10² elements in each of ~50% fields; 3+ = 10² - 10³ elements in each of ~75 fields; 4+ => 75% fields obscured.

^d Possibility of fungal growth *in situ* based on microscopic observations; Y = yes; N = no; ? = ambiguous. For explanation please refer to the final page of this report.

END OF REPORT

Examined By

Released By



Yaima Arocha-Rosete, PhD

Mike Saleh, MHSc

Analyst

Analyst





RESULTS OF LABORATORY ANALYSES:

JOB NO. 29111.00

To:	Paul Smith	Date of report:	2017/11/16
Company:	Arcadis Canada Inc.	Date of sampling:	2017/11/15
Client Project:	CCIW	Analyst:	Yaima Arocha-Rosete
Client Address:	121 Granton Drive, Unit 12, Richmond Hill, ON L4B 3N4	Date Received:	2017/11/15

Guidance on the interpretation of microscopic findings Samples of bulk materials as well as tape lift samples from potentially contaminated surfaces may be examined microscopically to assess the potential of these materials to be supporting fungal growth and serving as indoor fungal amplification sites. Guidelines on indoor microbial contamination proposed by Health Canada (HC. 1995. Indoor air quality in office buildings: A technical guide. Federal-Provincial Advisory Committee on Environmental and Occupational Health. Ottawa: Environmental Health Directorate 93-EHD-166 rev.) state unambiguously that indoor, active fungal growth sites are unacceptable regardless of the extent to which these amplifiers impact on the indoor airborne spore-load. Fungal spores are commonly borne on air currents and settle on flat surfaces as a matter of course. Thus, the observation of fungal spores alone is insufficient to characterize a specimen as a growth site. This judgment primarily requires the microscopic visualization of fungal filaments ("hyphae", or *en masse*, "mycelia"). Additionally, the identification of different kinds of fungi usually requires the observation of spores (e.g. conidia, ascospores, etc.) along with the organs responsible for their production (e.g. conidiophores, ascomata, etc.). However, the latter rarely persist long after the spores have been produced, making definitive identification difficult or impossible in aged specimens. The rating system used by Sporometrics to score the frequency of structures observed microscopically is based on a 5-point assessment of 50-100 microscopic fields, usually taken at 400 x magnification. This system uses the following rating criteria:

Descriptor	Criteria (based on 50-100 fields)	Interpretation of growth <i>in situ</i> according to observations:	
		Spores alone	Spores and spore-bearing structures or mycelia
tr	10 ⁰ -10 ¹ elements in total	growth not indicated	growth not indicated
1+	10 ⁰ -10 ¹ elements per ~25% fields	unclear	growth indicated
2+	10 ¹ -10 ² elements per ~50% fields	growth indicated	growth indicated
3+	10 ² -10 ³ elements per ~75% fields	growth indicated	growth indicated
4+	> 75% fields obscured by elements	growth indicated	growth indicated

APPENDIX C

Summary of Asbestos, Lead and Silica Work Classifications

TABLE C-1
SUMMARY OF CLASSIFICATION OF
TYPE 1, 2 AND 3 OPERATIONS
(Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m² asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m² of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m² or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF
TYPE 1, 2 AND 3 OPERATIONS
(Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2
SUMMARY OF CLASSIFICATION OF
LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m ³	>0.05 to 0.50 mg/m ³	>0.50 to 1.25 mg/m ³	>1.25 to 2.50 mg/m ³	>2.50 mg/m ³

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbitt or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF
LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m ³	>0.50 to 2.50 mg/m ³	>2.5 mg/m ³
Quartz and Tripoli	>0.10 to 1.0 mg/m ³	>1.0 to 5.0 mg/m ³	>5.0 mg/m ³

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
- Abrasive blasting of a material that contains ≥ 1 per cent silica.

APPENDIX D

Photographs

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 1

Date:

August 4, 2017,

Description:

Location of Sample A-1 (roof sample).

Location:

South Side of Roof.



Photo: 2

Date:

August 4, 2017.

Description:

Location of Sample A-2 (roof sample).

Location:

Central Portion of Roof.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 3

Date:

August 4, 2017.

Description:

Location of Sample A-3 (roof sample).

Location:

North side of roof.



Photo: 4

Date:

August 4, 2017.

Description:

Asbestos cement exhaust pipe.

Location:

Roof.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 5

Date:

August 4, 2017.

Description:

Location of sample P-1 (white ceiling paint).

Location:

A&L Eighth floor Mechanical Room.

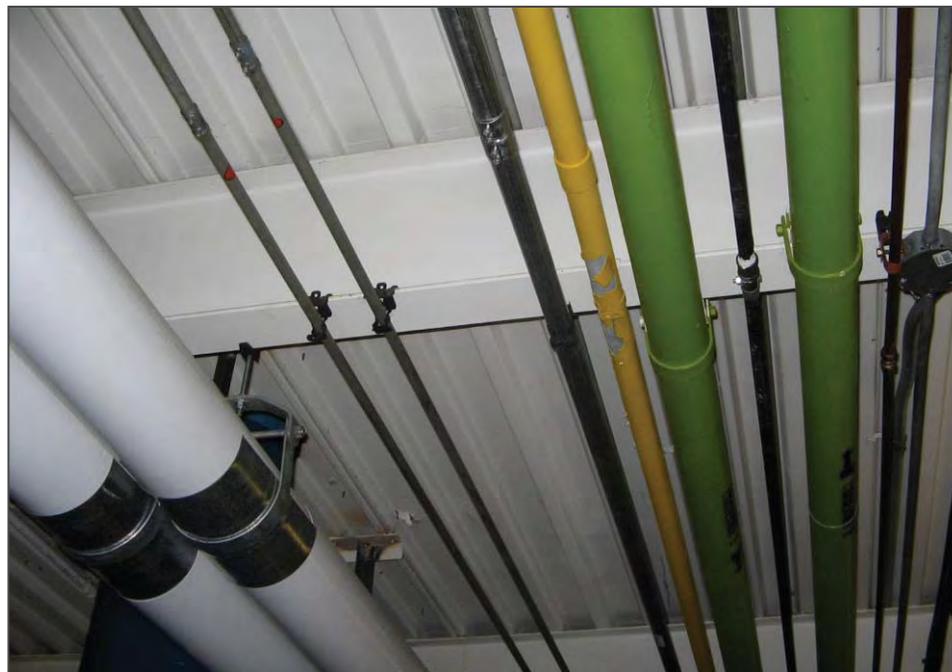


Photo: 6

Date:

August 4, 2017.

Description:

Location of Sample P-2 (yellow pipe paint).

Location:

A&L Eighth floor Mechanical Room.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 7
Date:
August 4, 2017.
Description:
Asbestos pipe insulation.
Location:
A&L Eighth floor Mechanical
Room.



Photo: 8
Date:
August 4, 2017.
Description:
Asbestos cement exhaust
pipe.
Location:
Eighth floor Mechanical
Room.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 9

Date:

August 4, 2017.

Description:

Location of Sample A-4 (white vinyl floor tile).

Location:

Third floor Mechanical Room.



Photo: 10

Date:

August 4, 2017.

Description:

Location of sample A-5 (rough wall plaster).

Location:

Rondar Office, third floor
Mechanical Room.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 11

Date:

August 4, 2017.

Description:

Location of sample A-6
(hanger insulation).

Location:

Third floor Mechanical Room.



Photo: 12

Date:

August 4, 2017

Description:

Asbestos-containing duct
insulation.

Location:

Third floor Mechanical Room.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 13

Date:

August 4, 2017.

Description:

Asbestos-containing pipe
insulation.

Location:

Third floor Mechanical Room.



Photo: 14

Date:

August 4, 2017.

Description:

Asbestos-containing pipe
insulation.

Location:

Tunnel between third floor
Mechanical Rooms.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 15

Date:

August 4, 2017.

Description:

Location of Sample P-3 (blue exhaust paint).

Location:

Third floor Mechanical Room.



Photo: 16

Date:

August 4, 2017.

Description:

Location of Sample P-4 (green duct paint).

Location:

Third floor Mechanical Room.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 17

Date:

August 23, 2017.

Description:

Location of Sample A-36 (12" x 12" vinyl floor tile).

Location:

Room L662.



Photo: 18

Date:

August 23, 2017.

Description:

Location of Sample A-39 (black counter-top).

Location:

Room L668.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 19

Date:

August 23, 2017.

Description:

Location of Sample A-41
(white sink coating).

Location:

Room L625.



Photo: 20

Date:

August 23, 2017.

Description:

Location of Samples A-43
(wall plaster), P-9 (white wall
paint) and A-44 (ceiling tile).

Location:

Corridor at stairwell NW6.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 21

Date:

August 23, 2017.

Description:

Location of Sample A-22
(cement exhaust pipe).

Location:

Room L558.



Photo: 22

Date:

August 23, 2017.

Description:

Location of Sample A-19 (grey
gloss caulking).

Location:

Room L558.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 23

Date:

August 23, 2017.

Description:

Location of Sample A-21 (grey pipe caulking).

Location:

Room L558.



Photo: 24

Date:

August 23, 2017.

Description:

Location of Samples A-23 (masonry mortar) and A-24 (ceiling plaster).

Location:

Room L556.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 25

Date:

August 23, 2017.

Description:

Location of Sample A-45
(white sink coating).

Location:

Room L572.

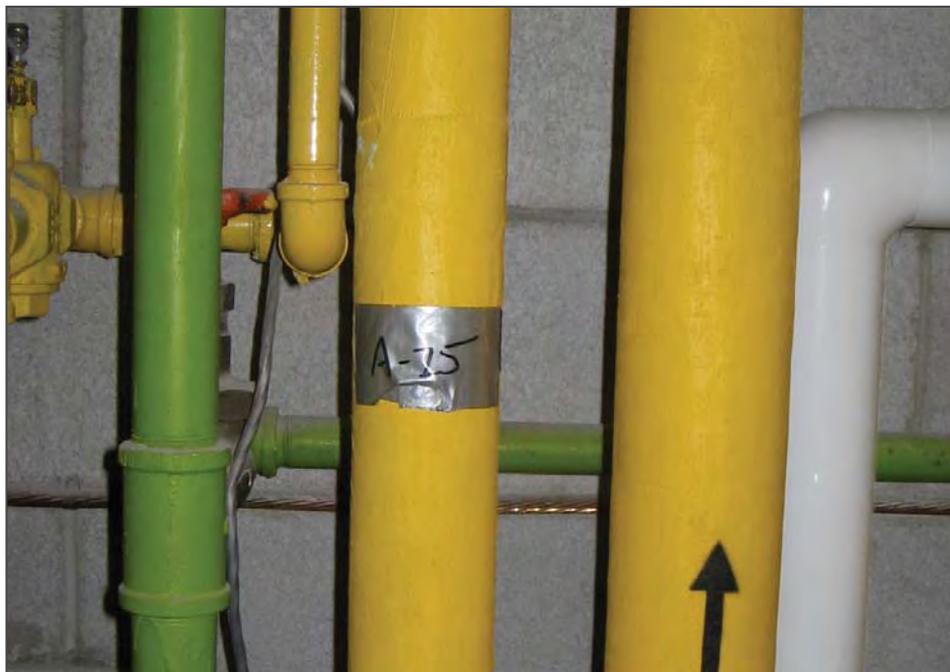


Photo: 26

Date:

August 23, 2017.

Description:

Location of Sample A-25
(condensate pipe straight
insulation).

Location:

Room L517.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 27

Date:

August 23, 2017.

Description:

Location of sample P-8 (white ceiling paint).

Location:

Room L516.

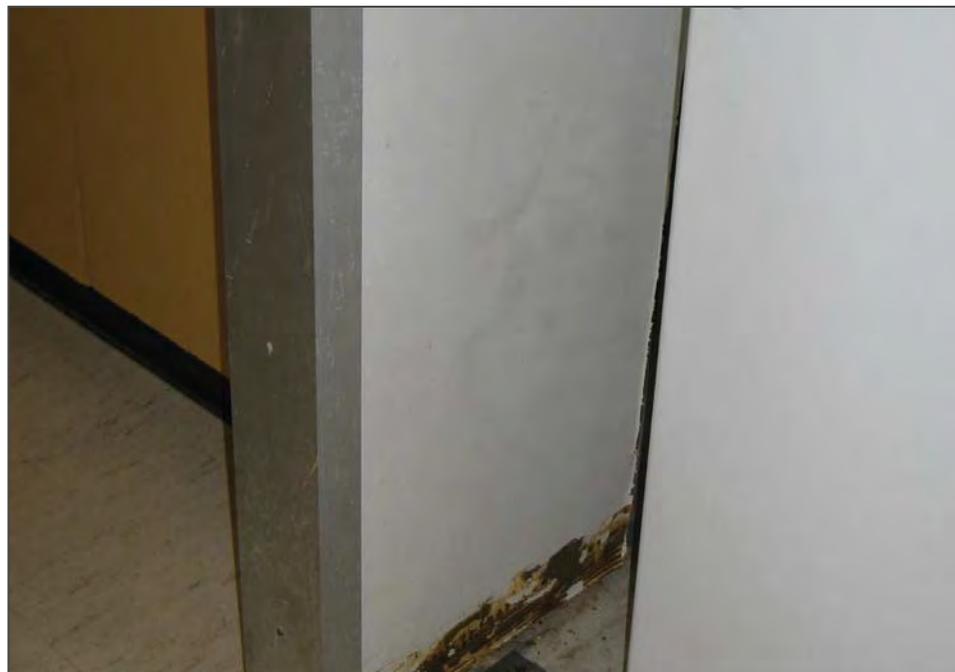


Photo: 28

Date:

August 23, 2017.

Description:

Location of samples A-26 (not submitted) and A-46 (vinyl baseboard mastic).

Location:

Room L504.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 29

Date:

August 23, 2017.

Description:

Location of Sample A-12
(drywall joint compound).

Location:

Corridor at 4th Floor Elevator.



Photo: 30

Date:

August 23, 2017.

Description:

Location of sample A-11 (12”
x 12” vinyl floor tile).

Location:

Corridor at Room L460.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 31

Date:

August 23, 2017.

Description:

Location of Sample A-47 (vinyl
baseboard mastic).

Location:

Room L472.



Photo: 32

Date:

August 23, 2017.

Description:

Location of Sample A13
(masonry mortar).

Location:

Room L436.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 33

Date:

August 23, 2017.

Description:

Location of Sample A-7 (grey column caulking).

Location:

Room L420.



Photo: 34

Date:

August 23, 2017.

Description:

Location of Sample A14 (ceiling plaster).

Location:

Room L438.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 35

Date:

August 23, 2017.

Description:

Location of Sample A-15A
(vinyl sheet flooring).

Location:

Room L401.



Photo: 36

Date:

August 23, 2017

Description:

Location of Sample P-6 (black
trim paint).

Location:

Room L401.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 37

Date:
August 23, 2017.

Description:
Location of Sample A-17
(cement board in fumehood storage).

Location:
Room L446.



Photo: 38

Date:
August 23, 2017.

Description:
Location of Sample A—16
(white vinyl floor tile).

Location:
Room L454.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 39

Date:

August 24, 2017.

Description:

Location of Sample A-49 (grey duct seal).

Location:

Room L755.



Photo: 40

Date:

August 24, 2017.

Description:

Location of sample A-51 (grey pipe caulking).

Location:

Room L755.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 41

Date:

August 24, 2017.

Description:

Location of sample A-52
(brown duct seal).

Location:

Corridor at Room L759A.



Photo: 42

Date:

August 24, 2017.

Description:

Location of Samples A-53
(ceiling plaster) and P-10
(white ceiling paint).

Location:

Room L756.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 43

Date:

August 24, 2017.

Description:

Location of Sample A-56 (vinyl sheet flooring paper backing).

Location:

Room L730.



Photo: 44

Date:

August 24, 2017.

Description:

Location of Sample A-57 (drywall joint compound).

Location:

Room L730.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 45

Date:

August 24, 2017.

Description:

Location of Sample P-12
(yellowish wall paint).

Location:

Room L730.



Photo: 46

Date:

August 24, 2017.

Description:

Location of Sample A-58
(brown duct seal).

Location:

Corridor at Room L635A.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 47

Date:

August 24, 2017.

Description:

Location of Sample A-59 (grey duct seal).

Location:

Room L621.



Photo: 48

Date:

August 24, 2017.

Description:

Location of Sample A-8 (grey glass caulking).

Location:

Room L420.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 49

Date:

August 24, 2017.

Description:

Location of Sample A-9 (grey pipe caulking).

Location:

Room L420.



Photo: 50

Date:

August 24, 2017.

Description:

Location of Sample A-60 (grey duct seal).

Location:

Room L420.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 51

Date:

August 24, 2017.

Description:

Location of Sample P-7 (white wall paint).

Location:

Room L444.



Photo: 52

Date:

August 24, 2017.

Description:

Location of Sample A-64 (grey glass caulking).

Location:

Room L457.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 53

Date:

September 7, 2017.

Description:

Location of Sample A-65 (12 x 12" vinyl floor tile).

Location:

Corridor at Room L146.



Photo: 54

Date:

September 7, 2017.

Description:

Location of Sample A-66 (12" x 12" vinyl floor tile).

Location:

Room L150.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 55

Date:

September 7, 2017.

Description:

Location of Sample A-67
(textured ceiling tile).

Location:

Room L145A.



Photo:56

Date:

September 7, 2017.

Description:

Location of Sample A-68
(texture coat on ceiling tile).

Location:

Room L145.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 57

Date:

September 7, 2017.

Description:

Location of Samples A-69, 70
and 71 (wall parging).

Location:

Room L112.



Photo: 58

Date:

August 4, 2017.

Description:

Location of Sample A-78 (
ceiling texture coat).

Location:

Mall area.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 59

Date:

August 4, 2017.

Description:

Location of samples A-79 and 80 (ceiling texture coat).

Location:

Mall area.



Photo: 60

Date:

August 4, 2017.

Description:

Location of samples A-81 and 82 (ceiling texture coat).

Location:

Mall area.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 61

Date:

August 4, 2017.

Description:

Location of Samples A-83 and 84 (ceiling texture coat).

Location:

Mall area.



Photo: 62

Date:

September 21, 2017.

Description:

Location of sample A-73 (2' x 4' ceiling tile).

Location:

Room W224.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 63

Date:

September 21, 2017.

Description:

Location of sample A-74 (wall plaster).

Location:

Room W220.

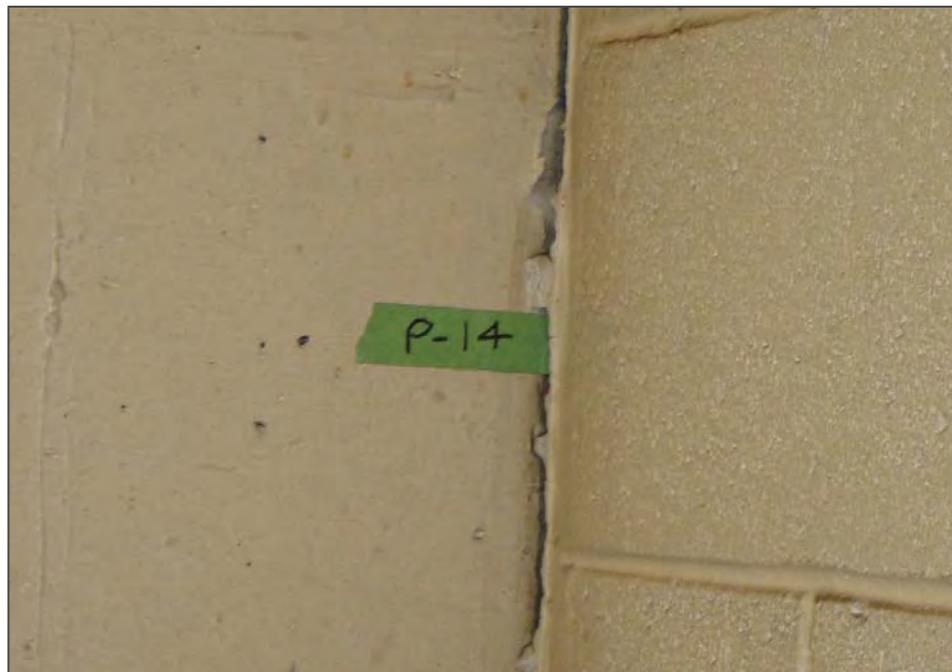


Photo: 64

Date:

September 21, 2017.

Description:

Location of sample P-14 (yellow wall and ceiling paint).

Location:

Room W272.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 65

Date:

September 21, 2017.

Description:

Location of Sample P-15
(white wall paint).

Location:

Room W209.



Photo: 66

Date:

September 21, 2017.

Description:

Location of Sample A-75
(fireproofing).

Location:

Corridor at Room W238.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 67

Date:

September 21, 2017.

Description:

Location of Sample A-76
(drywall joint compound).

Location:

Room W249.



Photo: 68

Date:

September 21, 2017.

Description:

Location of sample A-77 (12"
x 12" vinyl floor tile).

Location:

Corridor at Room W250.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 69

Date:

August 23, 2017.

Description:

Location of Sample A-18 (vinyl sheet flooring).

Location:

Room L414.



Photo: 70

Date:

August 17, 2017.

Description:

Location of Samples A-27, 28 and 29 (2' x 4' ceiling tile).

Location:

Room L525.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 71

Date:

August 17, 2017.

Description:

Location of samples A-31 and 32 (vinyl sheet flooring).

Location:

Room L525.



Photo: 72

Date:

August 17, 2017.

Description:

Location of samples A-33 and 34 (vinyl sheet flooring).

Location:

Room L533.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario

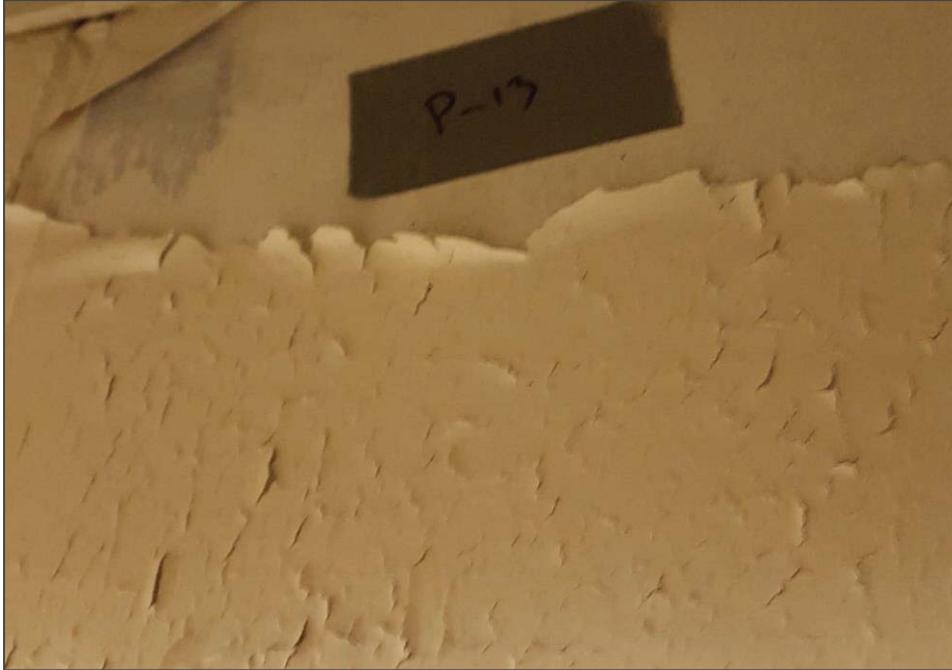


Photo: 73

Date:

August 30, 2017.

Description:

Location of sample P-13
(white column paint).

Location:

Room R272.

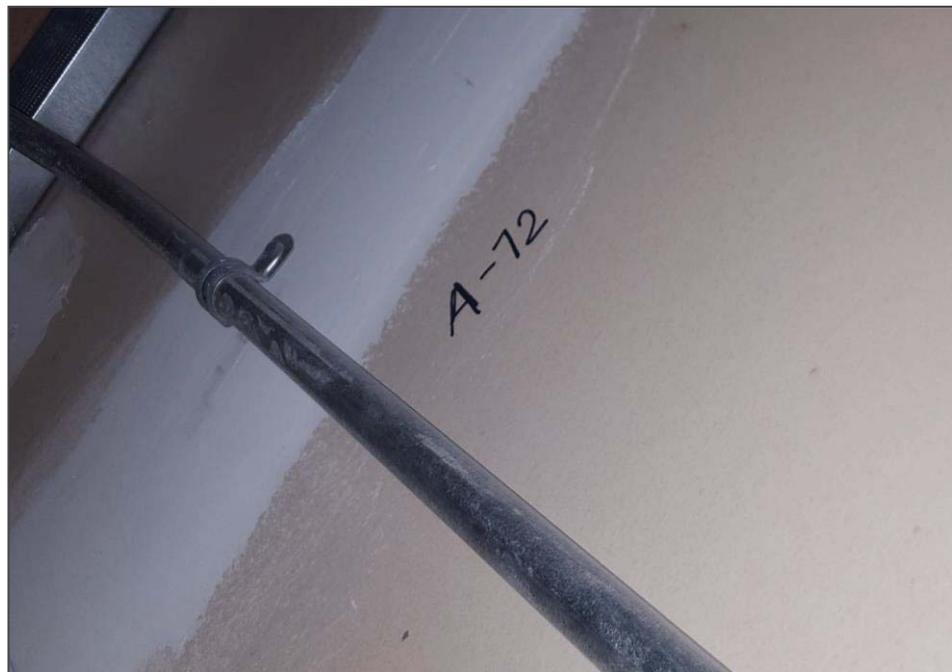


Photo: 74

Date:

September 12, 2017.

Description:

Location of sample A-72
(drywall joint compound).

Location:

Room W107.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 75

Date:

September 14, 2017.

Description:

Location of Sample A-77A
(drywall joint compound).

Location:

Room 227.



Photo: 76

Date:

September 14, 2017.

Description:

Location of sample A-78A
(12" x 12" vinyl floor tile).

Location:

Boiler Plant.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario

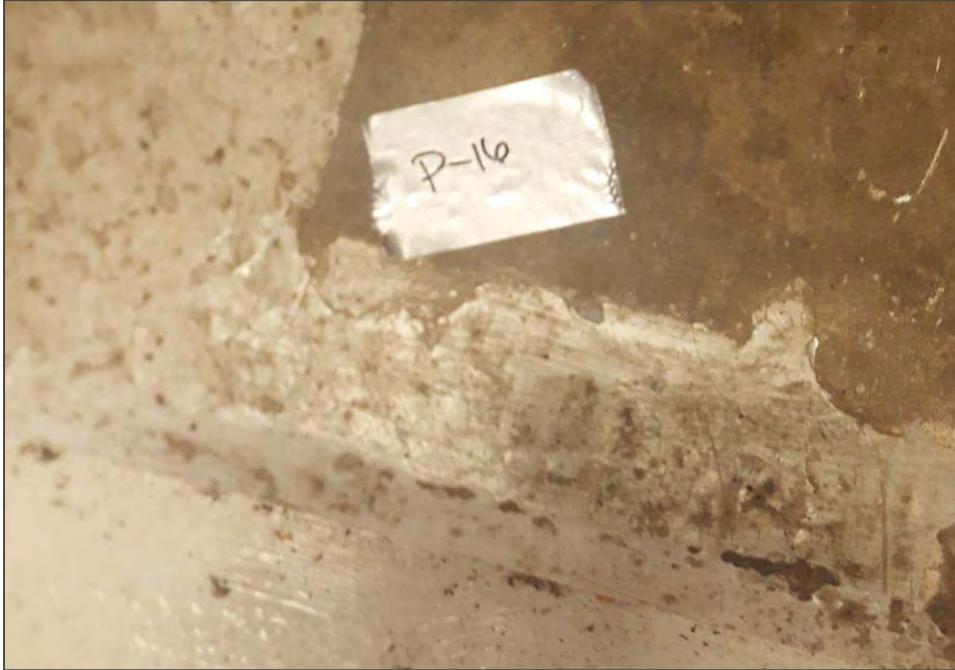


Photo: 77

Date:

September 14, 2017.

Description:

Location of Sample P-16 (grey floor paint).

Location:

Boiler Plant.



Photo: 78

Date:

October 3, 2017.

Description:

Location of Sample A-81A (ceiling tile).

Location:

Second Floor Corridor of WTC Building.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario

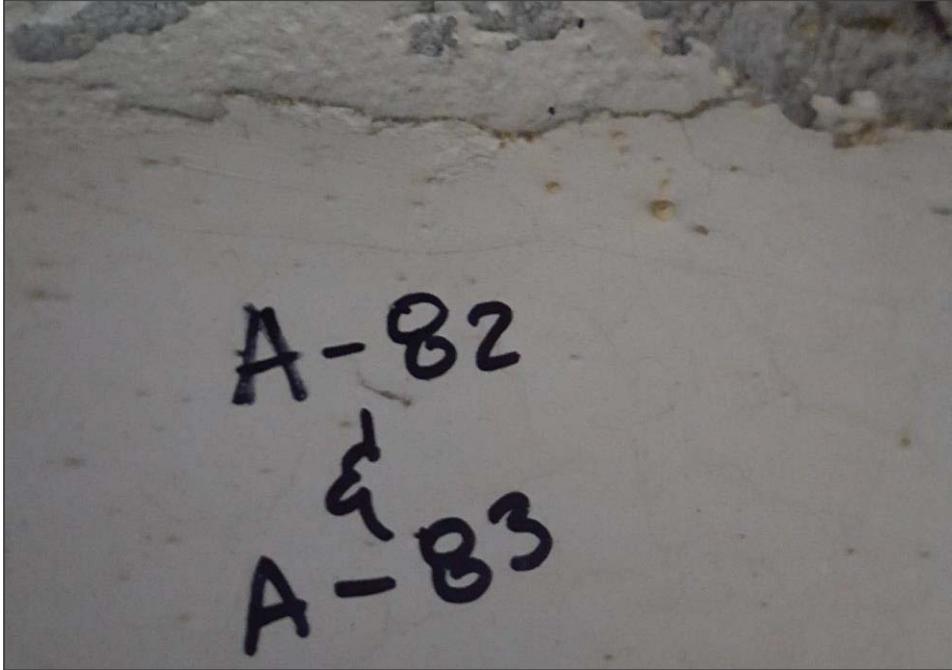


Photo: 79

Date:

October 3, 2017.

Description:

Location of Samples A-82A
and 83-A (plaster).

Location:

Room S202.



Photo: 80

Date:

October 3, 2017.

Description:

Location of Sample A-85
(drywall joint compound).

Location:

Room S223.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 81

Date:

October 3, 2017.

Description:

Location of Sample A-86
(fireproofing).

Location:

Room S221.



Photo: 82

Date:

October 3, 2017.

Description:

Location of sample P-17
(white block paint).

Location:

Second Floor Corridor of WTC
Building.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 83

Date:

October 3, 2017.

Description:

Location of sample P-18
(white wall paint).

Location:

Room S246.

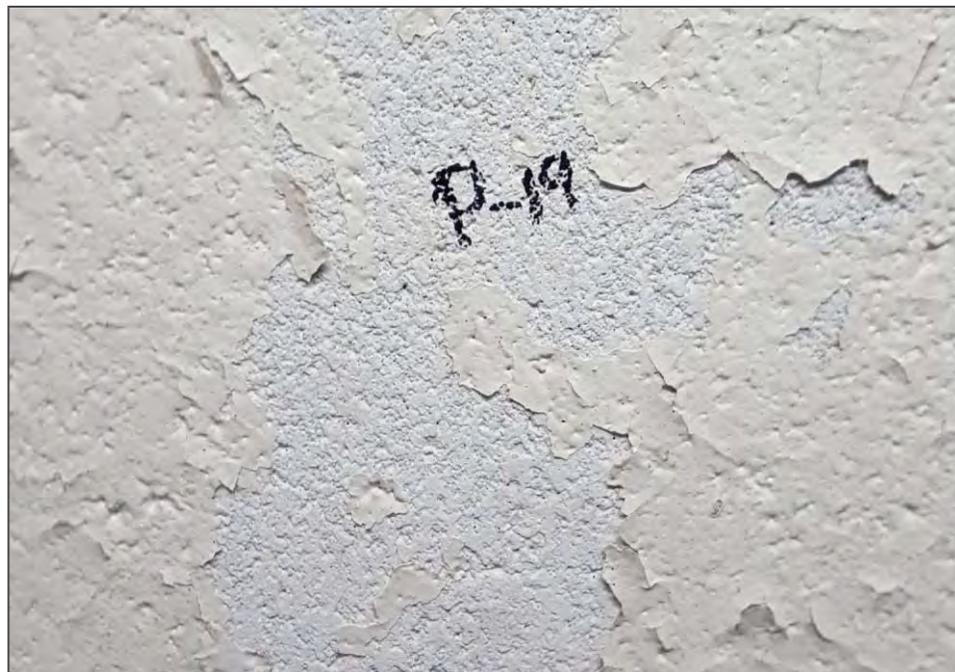


Photo: 84

Date:

October 3, 2017.

Description:

Location of sample P-19
(white block paint).

Location:

Room S216.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 85

Date:

October 5, 2017.

Description:

Location of Sample P-21
(green paint on drywall).

Location:

Room C113.

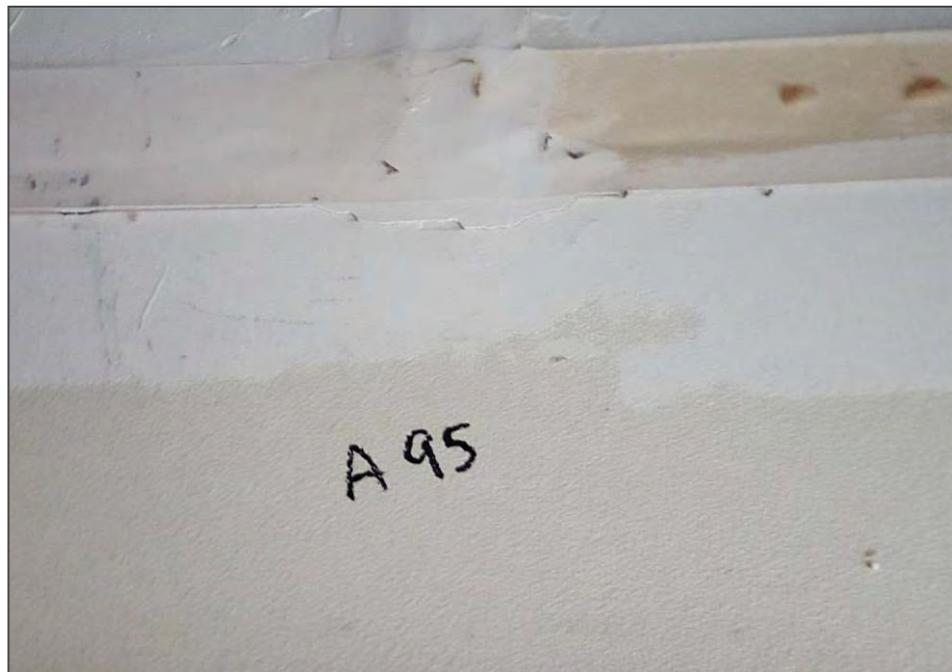


Photo: 86

Date:

October 5, 2017.

Description:

Location of Sample A-95
(drywall joint compound).

Location:

First Floor Corridor of North
Annex.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 87

Date:

October 5, 2017.

Description:

Location of Sample A-96 (12" x 12" vinyl floor tile).

Location:

First Floor Corridor of North Annex.



Photo: 88

Date:

October 5, 2017.

Description:

Location of Sample A-97 (2' x 4' ceiling tile).

Location:

Second Floor Corridor of North Annex.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 89

Date:

October 5, 2017.

Description:

Location of Sample A-98 (2' x 4' ceiling tile).

Location:

Room C211.



Photo: 90

Date:

October 5, 2017.

Description:

Location of Sample A-100 (12" x 12" vinyl floor tile).

Location:

Room C104.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 91

Date:

October 6, 2017.

Description:

Location of sample A-110 (12" x 12" vinyl floor tile).

Location:

Room S142.



Photo: 92

Date:

October 6, 2017.

Description:

Location of Sample A-113 (2' x 4' ceiling tile).

Location:

Room S142.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 93

Date:

October 6, 2017.

Description:

Location of Sample A-115
(drywall joint compound).

Location:

Room S142.

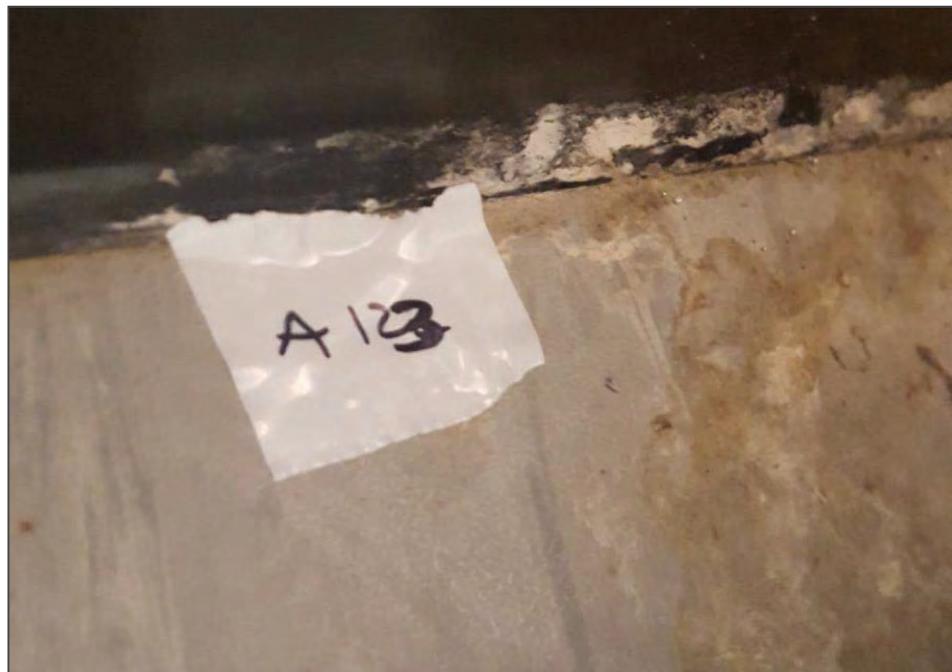


Photo: 94

Date:

December 20, 2017.

Description:

Location of Sample A-123
(vinyl sheet flooring).

Location:

Portable 1.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 95

Date:

December 20, 2017.

Description:

Location of Sample A-128 (2' x 4' ceiling tile).

Location:

Portable 2.



Photo: 96

Date:

December 20, 2017.

Description:

Location of Sample A-129 (2' x 4' ceiling tile).

Location:

Portable 2.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario

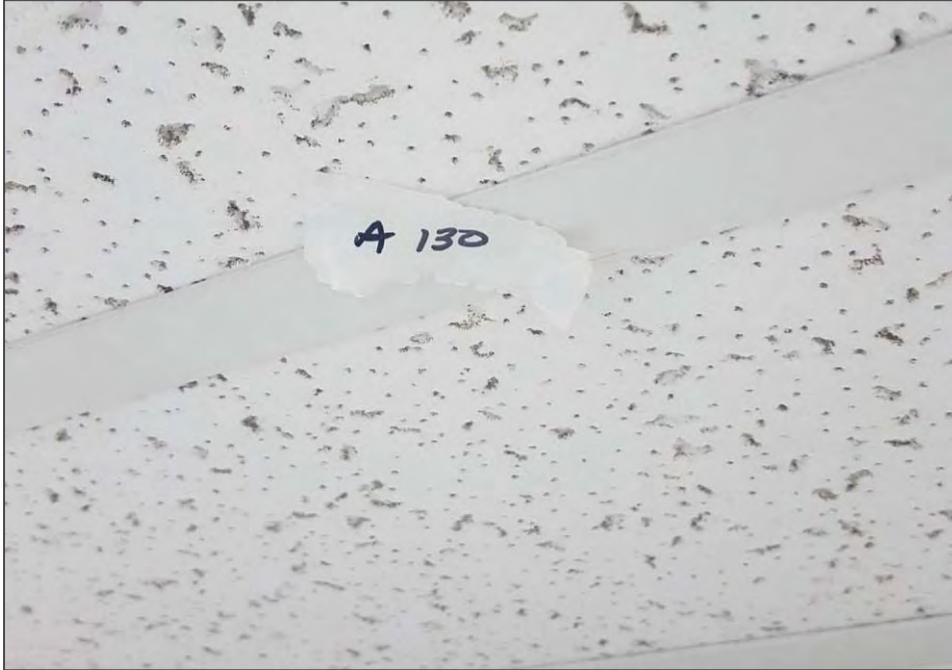


Photo: 97

Date:

December 20, 2017.

Description:

Location of Sample A-130 (2' x 4' ceiling tile).

Location:

Portable 2.



Photo: 98

Date:

December 20, 2017.

Description:

Location of Sample A-119 (exterior parging).

Location:

Portable 2.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 99

Date:

December 20, 2017.

Description:

Location of Sample A-120
(exterior parging).

Location:

Portable 2.



Photo: 100

Date:

December 20, 2017.

Description:

Location of Sample A-121
(exterior parging).

Location:

Portable 2.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario

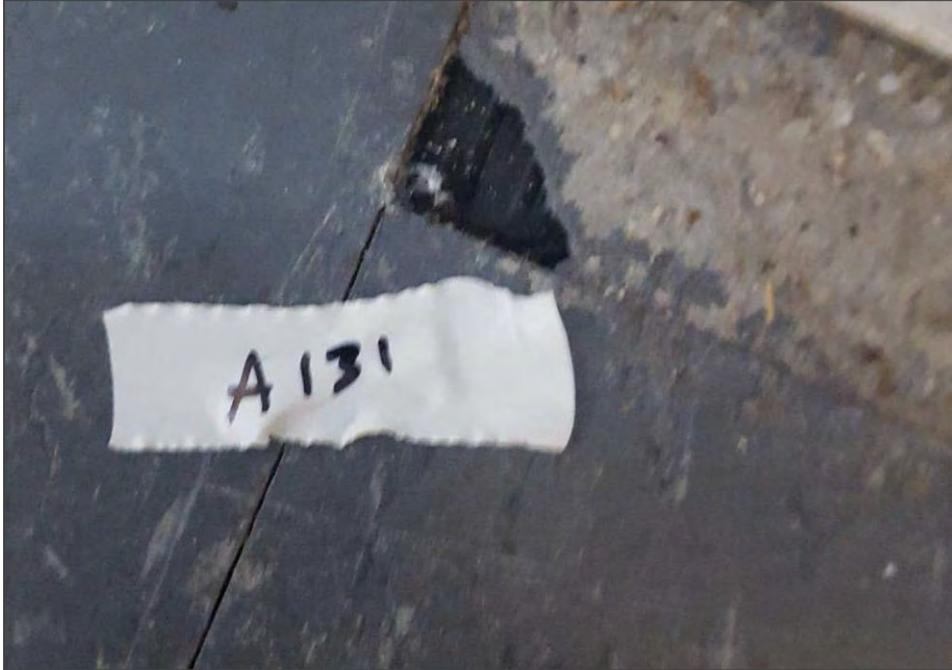


Photo: 101

Date:

December 20, 2017.

Description:

Location of Sample A-131
(12" x 12" vinyl floor tile).

Location:

Portable 2.



Photo: 102

Date:

December 20, 2017.

Description:

Location of Sample A-132
(12" x 12" vinyl floor tile).

Location:

Portable 2.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo: 103

Date:

December 20, 2017.

Description:

Location of Sample A-133
(12" x 12" vinyl floor tile).

Location:

Portable 2.



Photo: 104

Date:

December 20, 2017.

Description:

Location of Sample A-125 (2' x
4' ceiling tile).

Location:

Portable 4.

Project Photographs

Designated Substances and Hazardous Materials Survey
Canada Centre for Inland Waters, Burlington, Ontario



Photo:105

Date:

December 20, 2017.

Description:

Location of Sample A-126 (2' x 4' ceiling tile).

Location:

Portable 4.



Photo: 106

Date:

December 20, 2017.

Description:

Location of Sample A-127 (2' x 4' ceiling tile).

Location:

Portable 4.

APPENDIX E

Perchlorates Testing Report

VIA EMAIL: selina.chowdhury@pwgsc-tpsgc.gc.ca

Ms. Selina Chowdhury
Senior Environmental Specialist
Public Services and Procurement Canada
Environmental Services and Contaminated Sites
4900 Yonge Street, 11th Floor
Toronto, Ontario
M2N 6A6

Arcadis Canada Inc.
121 Granton Drive
Suite 12
Richmond Hill
Ontario L4B 3N4
Tel 905 882 5984
Fax 905 882 8962
www.arcadis.com

ENVIRONMENT

Subject:
Perchlorates Testing
CCIW Labs, AHU and Heating Upgrade Project
Canada Centre for Inland Waters
867 Lakeshore Road
Burlington, Ontario

Date:
December 19, 2017

Contact:
Wayne Cormack

Dear Ms. Chowdhury:

Phone:
905 882 5984

Arcadis Canada Inc. is pleased to submit our report on the findings of a sampling program carried out to determine if perchlorate residues are present in laboratory fume hoods, exhaust system ducts and in fan units in locations included in the scope of Phase 0, and Phase 1, 2, 3 and 4 of the CCIW Labs, AHU, and Heating Upgrade Project. The work was carried out in accordance with our proposal to Public Services and Procurement Canada (PSPC) dated November 27, 2017.

Email:
Wayne.Cormack
@arcadis.com

1. INTRODUCTION

Our ref:
702345-009

Environment and Climate Change Canada (ECCC) is planning to undertake a major renovation to floor 7 of the Administration and Lab (A&L) Building. The renovations are to facilitate a large laboratory modernization project involving extensive demolition and construction work.

If perchloric acid or perchlorates are used in a mechanical system that does not have internal wash-down capabilities, the deposits can build-up over time in the fume hood, baffles, filters, fan units and exhaust ducts. If precautions are not implemented during maintenance or construction-related work, demolition or shock to surfaces where perchlorate deposits are present could result in an explosion.

Two fumehoods designed for perchloric acid use with internal water wash-down capability are present in Laboratories L711 and L766. ECCC has not been able to provide any information to confirm whether or not heated perchloric acid has ever been used in any other fume hoods affected by the planned renovation work.

2. METHODOLOGY

Sample collection was conducted by Advanced HEPA Technologies Inc. (AHT) following procedures developed by the Brookhaven National Laboratory.

Once the sampling locations were selected, a piece of gauze was attached to a sampling probe. The gauze was moistened with distilled water followed by gently dabbing and holding the moistened gauze on the surface that was being tested. Each gauze pad was stored in a sample container and labelled.

Upon completion of swab sampling, the sample containers were transported to CASSEN Testing Laboratories for analysis and determination of perchlorates concentration performed using a modified version of NIOSH Method 7903, (CASSEN Analytical Method 8706 RO), which analyzes for the presence of Perchlorates by Weight using Ion Chromatography with Conductivity Detector. This analytical method is highly selective and provides positive identification of perchlorates, with accurate quantitation using an internal standard. The method is reliable for difficult sample matrices and provides a low limit of detection, of 20 ug/sample, depending on dilution factors.

3. RESULTS AND DISCUSSION

The results of analysis of swab samples are presented in the CASSEN laboratory report provided in Attachment A. The publication *Perchlorate and Perchloric Acid Sampling and Analysis, IH75200*, Brookhaven National Laboratory, Final Rev. 8, 03/05/14, specifies a guideline level of 1,250 ug/ft² for perchlorates in wipe samples. Samples with levels less than 1,250 ug/ft² are considered negative for the risk of a fire or explosion hazard. Samples with concentrations greater than 6,250 ug/ft² are considered positive for perchlorates and samples with concentrations between 1,250 and 6,250 ug/ft² are considered “suspect” for the presence of perchlorates. Eight-nine samples were analyzed as well as two field blank samples and one lab blank sample. Perchlorates were not detected (i.e. less than 316.8 ug/ft²) in 86 of the 89 samples analyzed. Perchlorates were detected in 3 samples, as summarized in Table 3.1.

Table 3.1
Summary of Wipe Sample Analysis Results
for Perchlorates

Sample Identification	Sample Location	Exhaust Fan ID	Perchlorates Concentration (ug/ft ²)
PR0401	Room 439 – Fume Hood	EF23	ND
PR0405	Room 454 – Exhaust Duct	---	ND
PR0406	Room 454 – Elephant Trunk	EF81	ND
Lab Blank	NA		ND
Field Blank	NA		ND
PR0704	Room 750 – Fume Hood	EF80	ND
PR0716	Room 721 – Elephant Trunk	---	ND
PR0717	Room 727 – Elephant Trunk	---	ND
PR0718	Room 730 – Fume Hood	EF148	ND
PR0720	Room 730 – Fume Hood	EF149	ND
PR0721	Room 730	EF148 or EF149	ND
PR0722	Room 730 – Fume Hood	EF166	ND
PR0725	Room 730 – Fume Hood	EF147	ND
PR0726	Room 730 – Fume Hood	EF146	ND
PR0727	Room 774A – Fume Hood	EF156	ND
PR0728	Room 774 – Fume Hood	EF159	ND
PR0730	Room 774 – Fume Hood	EF184	ND
PR0733	Room 774 – Fume Hood	EF86	ND
PR0734	Room 774 – Fume Hood	RG132	ND
PR0739	Room 773 – Fume Hood	EF132	ND
PR0740	Room 768 – Fume Hood	EF96	ND
PR0741	Room 768 – Fume Hood	---	ND
PR0742	Room 768 – Fume Hood	EF92	ND
PR0744	Room 768 – Fume Hood	EF97	ND
PR0745	Room 766 – Perchloric Fume Hood	EF105	ND
PR0746	Room 766 – Fume Hood	EF92	ND
PR0747	Room 766 – Fume Hood	EF93	ND
PR0750	Room 765 – Fume Hood	EF107	ND
PR0751	Room 761 – Fume Hood	EF108	ND
PR0752	Room 761 – Fume Hood	EF154	ND
PR0756	Room 761 – Fume Hood	EF152	ND
PR0760	Room 761 – Fume Hood	EF110	ND
PR0801	Penthouse Mech. Room	EF110	ND
PR0802	Penthouse Mech. Room	EF152	ND
PR0803	Penthouse Mech. Room	EF154	ND
PR0804	Penthouse Mech. Room	EF108	ND
PR0805	Penthouse Mech. Room	EF107	ND
PR0806	Penthouse Mech. Room	EF93	ND
PR0807	Penthouse Mech. Room	EF102	ND
PR0808	Penthouse Mech. Room	EF92	ND

Sample Identification	Sample Location	Exhaust Fan ID	Perchlorates Concentration (ug/ft ²)
PR0809	Penthouse Mech. Room	EF97	ND
PR0810	Penthouse Mech. Room	EF96	ND
PR0811	Penthouse Mech. Room	EF86	ND
PR0812	Penthouse Mech. Room	EF84	ND
PR0813	Penthouse Mech. Room	EF159	ND
PR0814	Penthouse Mech. Room	EF156	ND
PR0815	Penthouse Mech. Room	EF146	ND
PR0816	Penthouse Mech. Room	EF166	ND
PR0817	Penthouse Mech. Room	EF22	ND
PR0818	Penthouse Mech. Room	EF23	ND
PR0819	Penthouse Mech. Room	EF132	ND
PR0820	Penthouse Mech. Room	EF57	ND
PR0821	Penthouse Mech. Room	EF150	ND
PR0822	Penthouse Mech. Room	EF67	ND
PR0823	Penthouse Mech. Room	EF68A	ND
PR0824	Penthouse Mech. Room	EF76A	ND
PR0825	Penthouse Mech. Room	EF78	ND
PR0826	Penthouse Mech. Room	EF26A	ND
PR0827	Penthouse Mech. Room	EF80	ND
PR0840	Penthouse Mech. Room	EF3A	ND
PR0841	Penthouse Mech. Room	EF9	ND
PR0842	Penthouse Mech. Room	EF66	ND
PR0843	Penthouse Mech. Room	EF126	452
PR0844	Penthouse Mech. Room	EF101	ND
PR0845	Penthouse Mech. Room	EF100	ND
PR0846	Penthouse Mech. Room	EF98	ND
PR0762	Room 711 – Perchloric Fume Hood	EF2	ND
PR0763	Room 766 – Perchloric Fume Hood	EF105	ND
PR0601	Room 672 – Fume Hood	EF91	ND
PR0602	Room 674 – Fume Hood	EF98	ND
PR0603	Room 646 – Fume Hood	EF62	ND
PR0604	Room 646 – Exhaust Arm	EF64	ND
PR0605	Room 651 – Fume Hood	EF70	478
PR0501	Room 572 – Fume Hood	EF101	ND
PR0502	Room 570 – Fume Hood	EF104	ND
PR0503	Room 543 – Fume Hood	---	ND
PR0504	Room 543 – Fume Hood	---	ND
PR0407	Room 469 – Fume Hood	EF126	ND
PR0408	Room 448 – Fume Hood	EF68	ND
PR0705	Room 750 – Fume Hood	EF78	ND
PR0706	Room 747 – Fume Hood	EF76A	ND
PR0707	Room 747 – Fume Hood	EF68A	ND

Sample Identification	Sample Location	Exhaust Fan ID	Perchlorates Concentration (ug/ft ²)
PR0708	Room 748 – Fume Hood	EF67	ND
PR0709	Room 742 – Fume Hood	EF150	ND
PR0710	Room 740 – Fume Hood	EF157	ND
PR0711	Room 736 – Fume Hood	EF22	ND
PR0712	Room 703 – Fume Hood	EF45	ND
PR0713	Room 705 – Fume Hood	EF167	ND
PR0714	Room 711 – Perchloric Fume Hood	EF2	761
PR0715	Room 711 – Fume Hood	EF26A	ND
PR0743	Room 768 – Fume Hood	EF102	ND
PR0761 Field Blank		EF	ND

Note:

ND = <320 ug/ft². For blank samples, ND = <20 ug/wipe.

The perchlorates level in all samples was less than the guideline level considered to represent a risk for fire or explosions.

4. USE AND LIMITATIONS OF THIS REPORT

This report, prepared for Public Services and Procurement Canada (PSPC) on behalf of Environment and Climate Change Canada (ECCC), does not provide certification or warranty, expressed or implied, that the investigation conducted by Arcadis identified all perchlorate residues in HVAC system equipment in the subject building. The work undertaken by Arcadis was directed to provide information on the presence of perchlorates based on the results of laboratory analysis of a limited number of surface wipe samples.

The material in this report reflects Arcadis' best judgment in light of the information available at the time of the investigation, which was performed between November 29 and December 1, 2017.

This report was prepared by Arcadis for PSPC on behalf of ECCC. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

Public Services and Procurement Canada
December 19, 2017
702345-009

5. CLOSURE

We trust that the enclosed is suitable for your current purposes. Please call if you have any questions.

Sincerely,

Arcadis Canada Inc.



Wayne J. Cormack, M.Eng., CIH
Senior Consultant



Paul Smith, B.Sc.
Senior Industrial Hygienist

Attachments

- 1 CASSEN Lab Report

ATTACHMENT 1

CASSEN Testing Laboratories Analytical Report





CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3
tel: (416) 679-9663 fax: (416) 679-9668 web: www.cassen.ca

Advanced Hepa Technologies
ATTN: Jason Smith
1105 Queensway East, Units #29 & #30
Mississauga, Ontario, L4Y 4C1

Analytical Report

CASSEN Work Order #: 2508588
Date Received: December 05, 2017
Client Project Name / Number: N.A.

Reviewed By: _____

Queenie Yip, B.Sc., C.Chem, QA Manager



CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3
tel: (416) 679-9663 fax: (416) 679-9668 web: www.cassen.ca

Analytical Results

Date: December 13, 2017

Organization: Advanced Hepa Technologies
Address: 1105 Queensway East, Units #29 & #30, Mississauga, Ontario, L4Y 4C1
Contact: Jason Smith **Work Order No.:** 2508588
Project: N.A. **Date Received:** December 05, 2017
Date Analyzed: December 06, 2017

Analysis Requested: Perchloric Acid
Instrument: Ion Chromatography with Conductivity Detector
CASSEN Method: M.8706.R0 **No. of Samples:** 89
Reference Method: Mod.NIOSH7903 **No. of Blanks:** 3
Sampling Media: Wipe

Perchloric Acid

#	Lab ID	Sample Identification	Date Sampled (dd/mm/yy)	Sampling Area (in ²)	Amount	Concentration
					Total (µg)	(µg/in ²)
1	55183	PR0401	04/12/17	9	< 20	< 2.2
2	55184	PR0405	04/12/17	9	< 20	< 2.2
3	55185	PR0406	04/12/17	9	< 20	< 2.2
4	55186	Lab Blank	04/12/17	N.A.	< 20	N.A.
5	55187	Field Blank	04/12/17	N.A.	< 20	N.A.
6	55188	PR0704	04/12/17	9	< 20	< 2.2
7	55189	PR0716	04/12/17	9	< 20	< 2.2
8	55190	PR0717	04/12/17	9	< 20	< 2.2
9	55191	PR0718	04/12/17	9	< 20	< 2.2
10	55192	PR0720	04/12/17	9	< 20	< 2.2
11	55193	PR0721	04/12/17	9	< 20	< 2.2
12	55194	PR0722	04/12/17	9	< 20	< 2.2
13	55195	PR0725	04/12/17	9	< 20	< 2.2
14	55196	PR0726	04/12/17	9	< 20	< 2.2
15	55197	PR0727	04/12/17	9	< 20	< 2.2
16	55198	PR0728	04/12/17	9	< 20	< 2.2
17	55199	PR0730	04/12/17	9	< 20	< 2.2
18	55200	PR0733	04/12/17	9	< 20	< 2.2
19	55201	PR0734	04/12/17	9	< 20	< 2.2
20	55202	PR0739	04/12/17	9	< 20	< 2.2
21	55203	PR0740	04/12/17	9	< 20	< 2.2
22	55204	PR0741	04/12/17	9	< 20	< 2.2
23	55205	PR0742	04/12/17	9	< 20	< 2.2
24	55206	PR0744	04/12/17	9	< 20	< 2.2
25	55207	PR0745	04/12/17	9	< 20	< 2.2
26	55208	PR0746	04/12/17	9	< 20	< 2.2
27	55209	PR0747	04/12/17	9	< 20	< 2.2
28	55210	PR0750	04/12/17	9	< 20	< 2.2
29	55211	PR0751	04/12/17	9	< 20	< 2.2
30	55212	PR0752	04/12/17	9	< 20	< 2.2

This **Certificate of Analysis** shall not be reproduced except in full, without written approval of the laboratory. These analytical results pertain only to the samples as received in the laboratory. No responsibility or liability is assumed for the manner in which the results are used.



CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3
tel: (416) 679-9663 fax: (416) 679-9668 web: www.cassen.ca

Analytical Results

Date: December 13, 2017

Organization: Advanced Hepa Technologies
Address: 1105 Queensway East, Units #29 & #30, Mississauga, Ontario, L4Y 4C1
Contact: Jason Smith **Work Order No.:** 2508588
Project: N.A. **Date Received:** December 05, 2017
Date Analyzed: December 06, 2017

Perchloric Acid

#	Lab ID	Sample Identification	Date Sampled (dd/mm/yy)	Sampling Area (in ²)	Amount	Concentration
					Total (µg)	(µg/in ²)
31	55213	PR0756	04/12/17	9	< 20	< 2.2
32	55214	PR0760	04/12/17	9	< 20	< 2.2
33	55215	PR0801	04/12/17	9	< 20	< 2.2
34	55216	PR0802	04/12/17	9	< 20	< 2.2
35	55217	PR0803	04/12/17	9	< 20	< 2.2
36	55218	PR0804	04/12/17	9	< 20	< 2.2
37	55219	PR0805	04/12/17	9	< 20	< 2.2
38	55220	PR0806	04/12/17	9	< 20	< 2.2
39	55221	PR0807	04/12/17	9	< 20	< 2.2
40	55222	PR0808	04/12/17	9	< 20	< 2.2
41	55223	PR0809	04/12/17	9	< 20	< 2.2
42	55224	PR0810	04/12/17	9	< 20	< 2.2
43	55225	PR0811	04/12/17	9	< 20	< 2.2
44	55226	PR0812	04/12/17	9	< 20	< 2.2
45	55227	PR0813	04/12/17	9	< 20	< 2.2
46	55228	PR0814	04/12/17	9	< 20	< 2.2
47	55229	PR0815	04/12/17	9	< 20	< 2.2
48	55230	PR0816	04/12/17	9	< 20	< 2.2
49	55231	PR0817	04/12/17	9	< 20	< 2.2
50	55232	PR0818	04/12/17	9	< 20	< 2.2
51	55233	PR0819	04/12/17	9	< 20	< 2.2
52	55234	PR0820	04/12/17	9	< 20	< 2.2
53	55235	PR0821	04/12/17	9	< 20	< 2.2
54	55236	PR0822	04/12/17	9	< 20	< 2.2
55	55237	PR0823	04/12/17	9	< 20	< 2.2
56	55238	PR0824	04/12/17	9	< 20	< 2.2
57	55239	PR0825	04/12/17	9	< 20	< 2.2
58	55240	PR0826	04/12/17	9	< 20	< 2.2
59	55241	PR0827	04/12/17	9	< 20	< 2.2
60	55242	PR0840	04/12/17	9	< 20	< 2.2
61	55243	PR0841	04/12/17	9	< 20	< 2.2
62	55244	PR0842	04/12/17	9	< 20	< 2.2
63	55245	PR0843	04/12/17	9	28.2	3.1
64	55246	PR0844	04/12/17	9	< 20	< 2.2
65	55247	PR0845	04/12/17	9	< 20	< 2.2

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CASSEN Testing Laboratories

51 International Blvd., Toronto, Ontario, M9W 6H3
tel: (416) 679-9663 fax: (416) 679-9668 web: www.cassen.ca

Analytical Results

Date: December 13, 2017

Organization: Advanced Hepa Technologies
Address: 1105 Queensway East, Units #29 & #30, Mississauga, Ontario, L4Y 4C1
Contact: Jason Smith **Work Order No.:** 2508588
Project: N.A. **Date Received:** December 05, 2017
Date Analyzed: December 06, 2017

Perchloric Acid

#	Lab ID	Sample Identification	Date Sampled (dd/mm/yy)	Sampling Area (in ²)	Amount	Concentration
					Total (µg)	(µg/in ²)
66	55248	PR0846	04/12/17	9	< 20	< 2.2
67	55249	PR0762	04/12/17	9	< 20	< 2.2
68	55250	PR0763	04/12/17	9	< 20	< 2.2
69	55251	PR0601	04/12/17	9	< 20	< 2.2
70	55252	PR0602	04/12/17	9	< 20	< 2.2
71	55253	PR0603	04/12/17	9	< 20	< 2.2
72	55254	PR0604	04/12/17	9	< 20	< 2.2
73	55255	PR0605	04/12/17	9	29.9	3.3
74	55256	PR0501	04/12/17	9	< 20	< 2.2
75	55257	PR0502	04/12/17	9	< 20	< 2.2
76	55258	PR0503	04/12/17	9	< 20	< 2.2
77	55259	PR0504	04/12/17	9	< 20	< 2.2
78	55260	PR0407	04/12/17	9	< 20	< 2.2
79	55261	PR0408	04/12/17	9	< 20	< 2.2
80	55262	PR0705	04/12/17	9	< 20	< 2.2
81	55263	PR0706	04/12/17	9	< 20	< 2.2
82	55264	PR0707	04/12/17	9	< 20	< 2.2
83	55265	PR0708	04/12/17	9	< 20	< 2.2
84	55266	PR0709	04/12/17	9	< 20	< 2.2
85	55267	PR0710	04/12/17	9	< 20	< 2.2
86	55268	PR0711	04/12/17	9	< 20	< 2.2
87	55269	PR0712	04/12/17	9	< 20	< 2.2
88	55270	PR0713	04/12/17	9	< 20	< 2.2
89	55271	PR0714	04/12/17	9	47.6	5.3
90	55272	PR0715	04/12/17	9	< 20	< 2.2
91	55273	PR0743	04/12/17	9	< 20	< 2.2
92	55274	PR0761 Field Blank	04/12/17	N.A.	< 20	N.A.

See Final Page for Notes



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Analytical Results

Date: December 13, 2017

Organization: Advanced Hepa Technologies
Address: 1105 Queensway East, Units #29 & #30, Mississauga, Ontario, L4Y 4C1
Contact: Jason Smith **Work Order No.:** 2508588
Project: N.A. **Date Received:** December 05, 2017
Date Analyzed: December 06, 2017

Quality Control Batch #: 16343-1186

#	Analyte	CAS	Desorption Efficiency %	Uncertainty %	MRL (µg)
1	Perchloric Acid	007601-90-3	99.60	2.48	20

Notes:

- 1) N.A.: Information not available or not applicable
- 2) < is defined as less than the indicated minimum reporting limit (MRL). The analyte is either not detected or less than the minimum reporting limit (MRL).
- 3) MRL (Minimum Reporting Limit): it is the lowest mass/concentration of analyte in a sample that can be reported with a defined reproducible level of certainty.
- 4) Uncertainty is expressed as a percentage at a total mass per sample. It is a result of the evaluation aimed at characterizing the range within which the true value of a test result is estimated to lie at the 95% confidence interval.
- 5) CAS Number is the Chemical Abstracts Service registry number corresponding to the target analyte.
- 6) Desorption Efficiency is defined as the percent (%) spike recovery of a target analyte from the sampling media using the described procedure.
- 7) The results obtained for the target analyte have been lab blank subtracted.
- 8) Amount is the mass of target analyte in micrograms (ug) detected in the sampling media. The results have been corrected for desorption efficiency.
- 9) Concentration is the total amount of target analyte expressed in micrograms per square inches (ug/in²). The sampling area used are those supplied to CASSEN Testing Laboratories.
- 10) CTL has established an ISO17025 reporting policy that a maximum of 3 significant figures will be reported for test results.
- 12) Particulate salts of the acid will give a positive interference.

Analyst:

Jennifer Chen, B.Sc., Laboratory Analyst



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CASSEN Testing Laboratories

Division of CASSEN Group Inc.

Advanced Scientific Solutions

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December 13, 2017

Jason Smith
Advanced Hepa Technologies
1105 Queensway East, Units #29 & #30
Mississauga, Ontario
L4Y 4C1

**RE: Analytical Report for Advanced Hepa Technologies Project: N.A.
CASSEN Work Order No. 2508588**

Dear Jason,

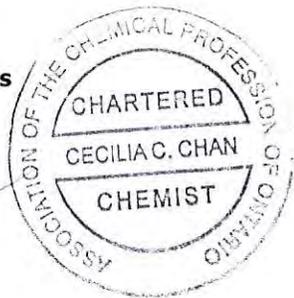
We have completed the analysis of the 92 wipe samples that you submitted on December 05, 2017 for the perchloric acid using ion chromatography with conductivity detector. Results of the analysis are summarized in the attached report, which includes the quality control data.

Jason, please feel free to give me a call at (416) 679-9663 should you need any clarification. Thank you for using our services.

Sincerely,

CASSEN Testing Laboratories

Cecilia Chan, M.Sc., C.Chem
Laboratory Director



Perchloric Acid Sampling - CCIW

Sample #	Room	Equip ID	Comments	LAB ID
✓ PR-0401	439	EF23	fume hood	55183
✓ PR0402	439	EF23	fume hood	
✓ PR0403	439	EF23	fume hood	
✓ PR0404	439	EF23	fume hood	
✓ PR0405	454		asbestos cement ceiling dust	55184
✓ PR0406	454	EF81	Elephant trunk	55185
✓ Lab Blank				55186
✓ Field Blank				55187
✓ PR0701	750	EF80	fume hood	
✓ PR0702	750	EF80	fume hood	
✓ PR0703	750	EF80	fume hood	
✓ PR0704	750	EF80	fume hood	55188
✓ PR0705	750	EF78	fume hood	55189 55262
✓ PR0706	747	EF76A	fume hood	55190 55263
✓ PR0707	747	EF68A	fume hood	55191 55264
✓ PR0708	748	EF67	fume hood	55192 55265
✓ PR0709	742	EF150	fume hood	55193 55266
✓ PR0710	740	EF157	fume hood	55194 55267
✓ PR0711	736	EF22	fume hood	55195 55268
✓ PR0712	703	EF45	fume hood	55196 55269
✓ PR0713	705	EF167	fume hood	55197 55270
✓ PR0714	711	EF2	fume hood	55198 55271
✓ PR0715	711	EF26A	fume hood	55199 55272
✓ PR0716	721	NA	Elephant trunk	55200 55189
✓ PR0717	727	NA	Elephant trunk	55201 98 55190 05/12/17

Perchloric Acid Sampling - CCIW

Sample #	Room	Equip ID	Comments
PR-01		EF148	Fume Hood
✓ PRO718	730	EF148	" 55191
✓ PRO719	730	EF148	"
✓ PRO720	730	EF149	" 55192
✓ PRO721	730		55193
✓ PRO722	730	EF166	Fume hood 55194
✓ PRO723	730	EF166	"
✓ PRO724	730	EF166	"
✓ PRO725	730	EF147	" 55195
✓ PRO726	730	EF146	" 55196
✓ PRO727	774A	EF156	" 55197
✓ PRO728	774	EF159	" 55198
✓ PRO729	774	EF159	"
✓ PRO730	774	EF184	" 55199
✓ PRO731	774	EF159	"
✓ PRO732	774	EF159	"
✓ PRO733	774	EF86	" 55200
✓ PRO734	774	EF132	" 55201
✓ PRO735	774	EF132	"
✓ PRO736	774	EF132	"
✓ PRO737	774	EF132	"
✓ PRO738	774	EF132	"
back in ✓ PRO739	773	EF132	" PRO739 55202
✓ PRO740	768	EF96	" 55203
✓ PRO741	768		55204

Perchloric Acid Sampling - CCIW

Sample #	Room	Equip ID	Comments
PR01	9		
✓ PR0742	768	EF92	55205
✓ PR0743	768	EF102	55273
✓ PR0744	768	EF97	55206
✓ PR0745	766	EF105	55207
✓ PR0746	766	EF92	55208
✓ PR0747	766	EF93	55209
✓ PR0748	766	EF93	
✓ PR0749	766	EF93	
✓ PR0750	765	EF107	55210
✓ PR0751	761	EF108	55211
✓ PR0752	761	EF154	55212
✓ PR0753	761	EF154	
✓ PR0754	761	EF154	
✓ PR0755	761	EF154	
✓ PR0756	761	EF152	55213
✓ PR0757	761	EF152	
✓ PR0758	761	EF152	
✓ PR0759	761	EF152	
✓ PR0760	761	EF110	55214
✓ PR0761	761	Field Blank 2	55274
✓ PR0801	PH	EF110	55215
✓ PR0802	PH	EF152	55216
✓ PR0803	PH	EF154	55217
✓ PR0804	PH	EF108	55218

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Perchloric Acid Sampling - CCIW

Sample #	Room	Equip ID	Comments
PR0801			
✓ PR0805	PH	EF107	55219
✓ PR0806	PH	EF93	55220
✓ PR0807	PH	EF102	55221
✓ PR0808	PH	EF92	55222
✓ PR0809	PH	EF97	55223
✓ PR0810	PH	EF96	55224
✓ PR0811	PH	EF86	55225
✓ PR0812	PH	EF84	55226
✓ PR0813	PH	EF159	55227
✓ PR0814	PH	EF156	55228
✓ PR0815	PH	EF146	55229
✓ PR0816	PH	EF166	55230
✓ PR0817	PH	EF22	55231
✓ PR0818	PH	EF23	55232
✓ PR0819	PH	EF132	55233
✓ PR0820	PH	EF57	55234
✓ PR0821	PH	EF150	55235
✓ PR0822	PH	EF67	55236
✓ PR0823	PH	EF68A	55237
✓ PR0824	PH	EF76A	55238
✓ PR0825	PH	EF78	55239
✓ PR0826	PH	EF26A	55240
✓ PR0827	PH	EF80	55241
✓ PR0828	PH	EF99	

Perchloric Acid Sampling - CCIW

Sample #	Room	Equip ID	Comments
PR01			
PR0829	PH	EF157	
PR0830	PH	EF38	
PR0831	PH	EF32	
PR0832	PH	EF25	
PR0833	PH	EF11	
PR0834	PH	EF140	
PR0835	PH	EF54	
PR0836	PH	EF62A	
PR0837	PH	EF64	
PR0838	PH	EF73A	
PR0839	PH	EF81	
PR0840	PH	EF3A	55242
PR0841	PH	EF9	55243
PR0842	PH	EF66	55244
PR0843	PH	EF126	55245
PR0844	PH	EF101	55246
PR0845	PH	EF100	55247
PR0846	PH	EF98	55248
PR0762	711	EF2	55249
PR0763	766	EF105	55250
PR0601	672	EF91	Shows as EF100 in 7th Floor Corridor 55251
PR0602	674	EF98	Fume hood 55252
PR0603	646	EF62	Shows as EF164 in 7th Floor Corridor 55253
PR0604	646	EF64	Exhaust Arm 55254

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